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THE HYMAC LINE

Pulp AND Paper Machinery

The HYDRAULIC MACHINERY CO., Ltd.

MONTREAL, CANADA

Hydraulic Pulp Presses
Hydraulic Pressure Pumps
Hydraulic Accumulators
Pulp Trucks
Hydraulic Sulphite Balers
"For Dried Sheets"
Hydraulic Pulp Balers
"For Pressed Laps"
Hydraulic Paper Balers
Power Driven Paper Balers
Rotary Sulphur Burners
Self Feeds
Hydraulic Forcing Presses
"Portable or Stationary"
Hydraulic Valves, Fittings
Piping, Etc. Etc.
"North" (Patented) Machines
Water Filters
Save-Alls
Pulp Washers
Press Rolls, Felt Rolls
And Table Rolls
"Hymac" Heavy Duty Wet Machines

"Hymac" High Grade
Diaphragm Screens
"Flat or Inclined Type"
"Hymac" Coarse Sliver Screen
"Hymac" (Record Type) Quick-Opening Gate Valves (Patented)
Cast Iron or Acid-Resisting Bronze
"Hymac" Pulp Thickeners
Group Arrangement (Patented)
Deckers or Slushers
Cylinder Moulds
"Standard or Special"
Washing Machines
(For Chemical Pulp)
Pipe Line Filters
Pulp Drying Machines
Pulp Grinders
(Three or Four Pockets)
Acid-Resisting Bronze, Valves and Digester Fittings
"Sheahan" Automatic Paper Carriers
Pulp Sampling Tools (Disk)

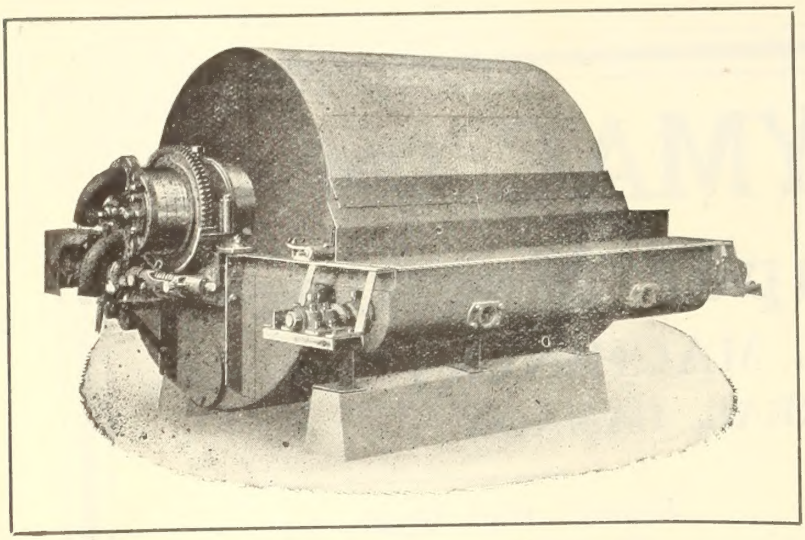
Bulletins Covering The Above Lines Will Be Sent Upon Request

WESTERN OFFICE---LONDON BUILDING, VANCOUVER, B.C.

Jamieson Engineering Co.

IN CHARGE

THE-HYMAC-LINE TRADE HYMAC MARK REGISTERED



How the OLIVER? washes brown stock

Oliver Continuous wash brown stock evenly, quickly and thoroughly, with a minimun loss of soda and a minimum use of hot water.

The sectionalized filtering drum revolves partially submerged in a receiving tank filled with brown stock fresh from the digestors.

Vacuum steadily removes the black liquor, causing a thin sheet of pulp to form over the submerged sections of the drum.

As this thin cake emerges from the tank it is first sprayed with weak liquor which displaces the strong liquor. The weak liquor is displaced in turn by hot wash water. Strong and weak solutions are automatically segregated and a clean cake is delivered at a uniform rate.

The following important economies soon pay the entire cost of an installation of Olivers:

1. Washroom labor is decreased 60%.
2. Soda losses are decreased 75%.
3. Pulp losses are entirely eliminated.
4. Floor space is reduced 75%.
5. Pulp is washed with 1/3 less wash water.
6. Black liquor returned to the digestors with 1/3 less dilution.
7. Accurate pulp samples readily obtainable.

Write us for complete information on use of Olivers in reducing washroom costs.

Oliver *Continuous* Filter Co.

San Francisco
503 Market St.

New York
33 W. 42nd St.

London
11-13 Southampton Row, W.C.



It Must Be Pure

The purity of the oxygen and dissolved acetylene used in welding and cutting operations has an important bearing on the result.

Only gases of extreme high purity will do a clean, satisfactory job, economically. That is why tests made by chemists and engineers show that both Dominion Oxygen and Prest-O-Lite Dissolved Acetylene have the highest rating of purity.

Both of these products are invariably maintained at a higher mark of purity than is usual for commercial use — an elaborate series of tests in our plants assures this uniform quality.

It is certainly more economical for you to buy the purest products when the price you pay is the lowest obtainable compared with other commercial oxygen and dissolved acetylene price lists.

So why not take full advantage of the saving offered to you by Dominion Service?

Dominion OXYGEN

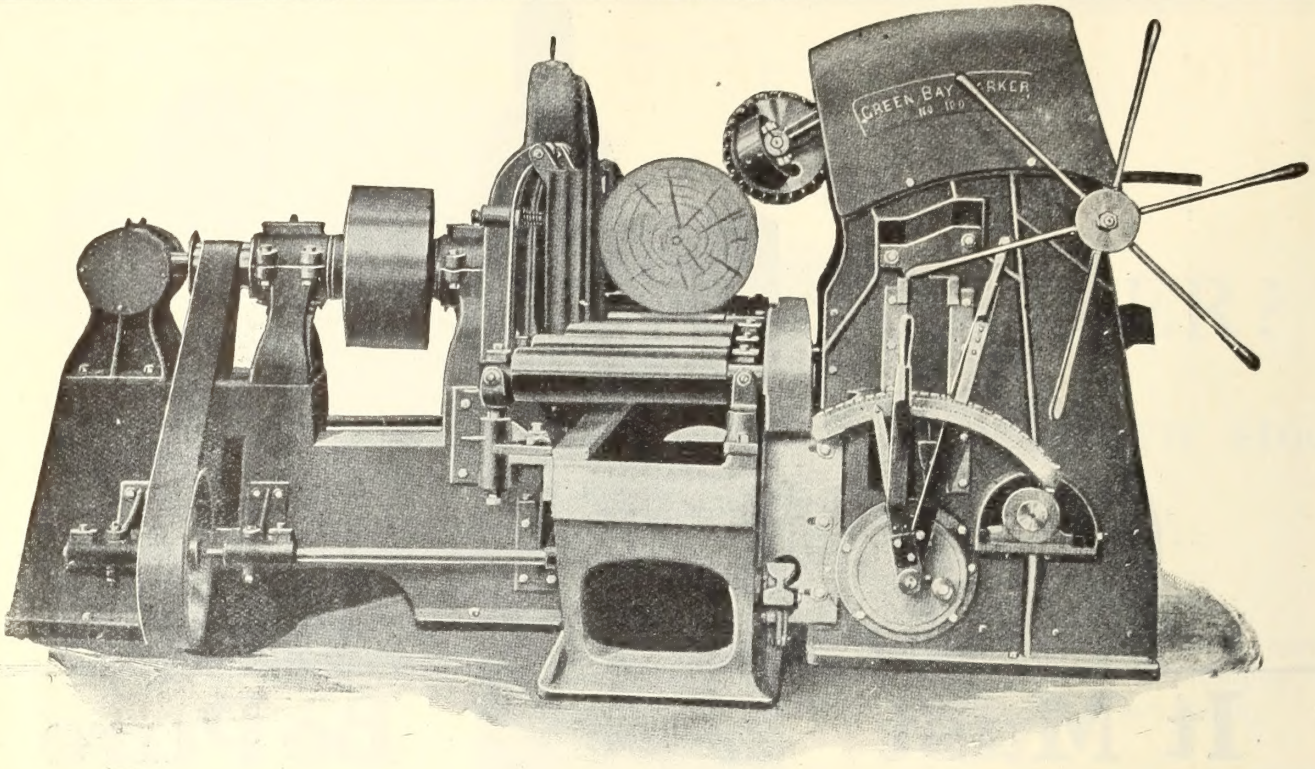
DOMINION OXYGEN COMPANY LIMITED.

General Offices:
80 Adelaide St. East, Toronto.

Distribution Points: Hamilton, Merritton, Montreal, Oshawa, Quebec, Shawinigan Falls, Toronto, Welland, Windsor, and Winnipeg.

Prest-O-Lite
DISSOLVED ACETYLENE

Operating the Welding and Cutting Gas Division of
Prest-O-Lite Company of Canada, Limited



Equip your Mills with Green Bay Barkers--Materland Labor Saving Machines

BARKERS that have stood the test of time—both normal and abnormal. **Higher** prices will be obtained in normal times for paper manufactured from wood barked on rotary knife barkers. **Equip your mill to take care of normal business conditions.**

OVER 300 MACHINES in use in Scandinavian countries — **Unquestionable evi**dence of the superiority of **Green Bay Barkers, over any other methods known.**

CANADIAN BARKER CO.

SAULT STE. MARIE, ONTARIO

The Watford Engineering Works,

Limited.

Established 1827 by Mr. GEO. TIDCOMBE, Senr.

PAPER MILL ENGINEERS & MILLWRIGHTS

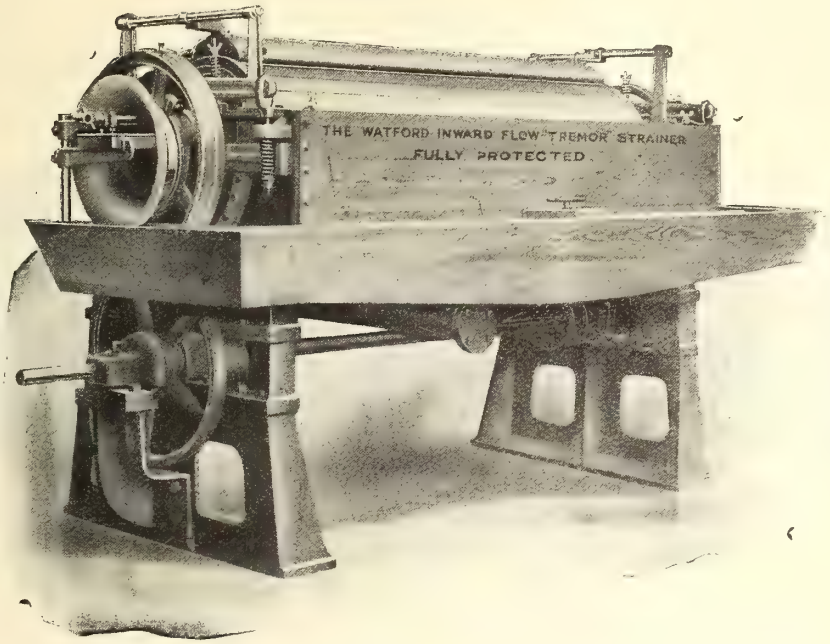
LOWER HIGH STREET, WATFORD, ENGLAND.

Telegrams: "Mechanical Watford." Code — 5th Edition A B C Telephone: 35 Watford.

WILLIAM WHYTE,

39 DRAPER AVENUE
MONTREAL, QUE.

Size, Inward Flow Drums, 48" x 23" — 85" x 28" and 90" x 42"



Size, Outward Flow Drums, 85" x 28" and 90" x 42"

LICENSES FOR

SOUTH FRANCE, GERMANY, ITALY, JAPAN, NORWAY, SWEDEN, SPAIN and SWITZERLAND: Messrs. Escher Wyss & Co., Zurich, Switzerland.

HOLLAND and BELGIUM: Mons. Edward Chantrenne, Nivelles, Belgium.

NORTH of FRANCE: Messrs. Lhomme & Argy, 9 Rue Lagrange, Paris.

U. S. A.: The Bagley & Sewell Co., Watertown, New York.

CANADA & NEWFOUNDLAND: Messrs. Chas. Walmsley & Co. (Canada), Ltd., Longueuil Works, Montreal.

The "Tremor" Screen

FOR PAPER MACHINES

(Either Inward or Outward Flow; Fully Protected)

Fitted with large drums suitable for Canadian and American practice

(A PURELY ROTARY SCREEN WITH NO RECIPROCATING PARTS)

Perfectly Silent Positive Rotating Drum and Minimum Upkeep

EXISTING SCREENS FITTED WITH THE "TREMOR" PATENTS

PULPERS, SCREEN PLATES, DRUMS AND CYLINDER MOULDS OF EVERY DESCRIPTION

SPRAY DAMPERS, SLITTERS, FROTH KILLERS, STUFF CHEST MIXERS, PULP SCREENS. Etc.

WHY DON'T YOU MOVE YOUR MILL TO FLORIDA?

YOU WOULD SAVE MONEY HEATING YOUR MACHINE ROOM.

TOO FAR AWAY FROM WOOD AND WATER ER, YOU SAY!

ALLRIGHT, WHY NOT MOVE FLORIDA TO YOUR MILL? INSTALL A "BRINER" ECONOMIZER IN YOUR MACHINE ROOM AND USE THE VAPOR FROM YOUR VENTILATORS TO HEAT THE AIR ENTERING THE MILL HOTTER THAN IT WOULD BE IF YOU WHERE IN FLORIDA.

ON FEB. 5th IT WAS 66° IN JACKSONVILLE, FLORIDA, THE SAME DAY IN QUEBEC A PAPER MILL WAS HEATING THE INCOMING AIR BY A "BRINER" ECONOMIZER TO 82° WITHOUT STEAM.

CAN YOU AFFORD TO RUN WITHOUT IT?

ROSS ENGINEERING OF CANADA, LIMITED

MAIN OFFICE
NEW BIRKS BUILDING
MONTREAL

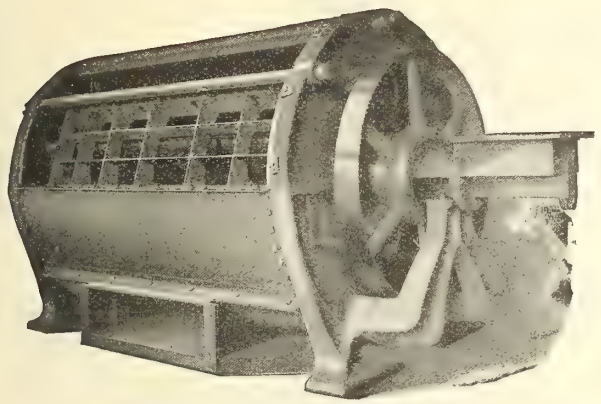
For SCREENING Pulp

FOUR PATENTED MACHINES

Knotter-Screen-Tailing Screener-Refiner

Tailing Screener

Screening of Rejections

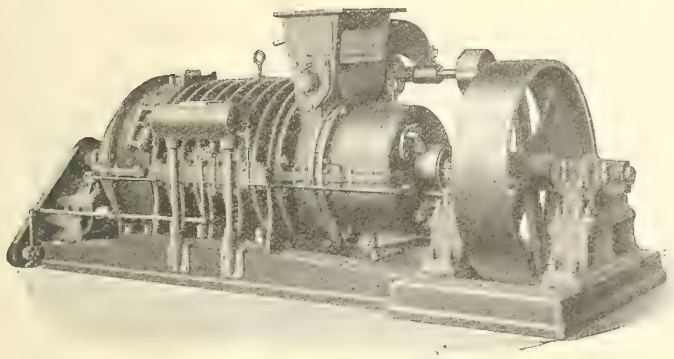


"IMPCO" TAILING SCREENER

For screening tailings the machine requires but about 2 H. P. and delivers rejections free of good stock. Very low upkeep expense.

Refiner

Making Good Pulp of Rejections



"IMPCO" REFINER

Refines ground wood screenings to all number one pulp. Requires about 75 H. P. to produce seven tons pulp in 24 hours.

SHERBROOKE MACHINERY CO., Ltd.

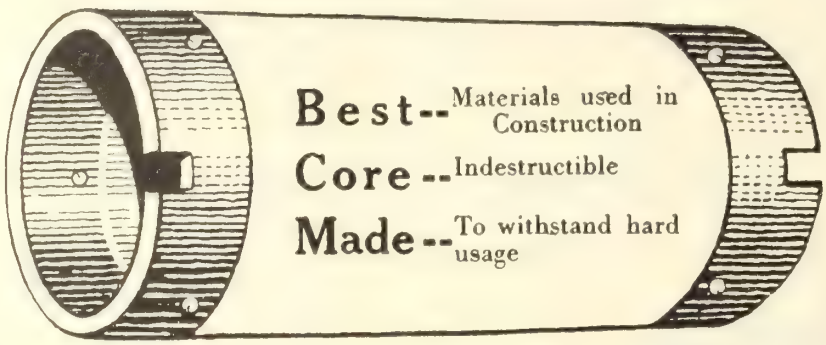
SHERBROOKE - QUEBEC

CANADIAN PAPER MANUFACTURERS

YOU CAN NOW SECURE THE ELIXMAN CORES

(with or without the patented steel caps)

at Hamilton, Ontario



Trial lot upon request — without cost to you

Canadian Elixman Company, Ltd.
King & Sydney Streets,
Hamilton, Ontario, Canada.

Elixman Paper Core Co., Inc.
Maple & Center Streets,
Corinth, N. Y., U. S. A.

CHINA CLAY.



FOWEY HARBOUR ENGLAND

ALL GRADES FOR PAPERMAKERS

TRADE MARK

H. D. POCHIN & Co LTD

MANCHESTER. ENGLAND.

CHINA CLAY MINEOWNERS & CHINA STONE QUARRYOWNERS

EST OVER 100 YEARS.



Controlling 200.000 Tons Annually.

SEND FOR SAMPLES OF OUR COATING CLAYS.

CANADIAN AGENTS

THE ALEXANDER MACPHERSON Co

8 JOHNSON ST. TORONTO.

Established 1870

AYERS LIMITED

LACHUTE MILLS P.Q.

Pioneers and leading the field, in Canada, in the manufacture of

PULP and PAPER MAKER'S FELTS

Largest Plant of the kind in the Dominion, ranking amongst the most modern FELT FACTORIES in the World.

Capacity easily taking care of very important Canadian customers' requirements — and shipments to the other Paper Making Countries.

The success and reputation of "Ayers Felts" bears evidence of the Quality and Dependability built into them. Construction features evolved for all kinds of machines, for all classes of paper, to give maximum efficiency with regard to the particular manufacturing problems in the various mills.

The Attainment of an Ideal

"FELTS
WASHED
WITHOUT
SHUTTING DOWN
PAPER MACHINES"

The Patented "Ayers" FELT WASHER attains this ideal for which paper makers have long been striving. By the means of this device, the work of cleaning and washing the Felts is done without stoppage of the machinery and, in the case of news print or similar paper, without breaking or crushing the sheet.

PATENTED IN U.S.A., CANADA AND EUROPEAN COUNTRIES.
PATENTS APPLIED FOR IN JAPAN AND MEXICO.

Already in operation in some of the largest Paper Mills where it is recognized as indispensable and a great money saver.

Privilege to install this FELT WASHER readily granted by AYERS LIMITED to all its customers on most reasonable terms.

Full particulars given upon application.

A special Felt has been designed for use in conjunction with this Felt Washer wherever it is in operation.

These two essential factors — "AYERS FELTS and FELT WASHER" — in perfect team work — make for efficiency, economy and genuine satisfaction in the Paper Mill.

GUTTA PERCHA & RUBBER, LIMITED
TRADE PMS MARK
THE "RED RIBBON" BELT
TORONTO, CANADA

Unmatched!

POWER TRANSMISSION BELTING

GUTTA PERCHA & RUBBER, LIMITED
TORONTO - CANADA
Sales Offices - - Coast to Coast

KENWOOD

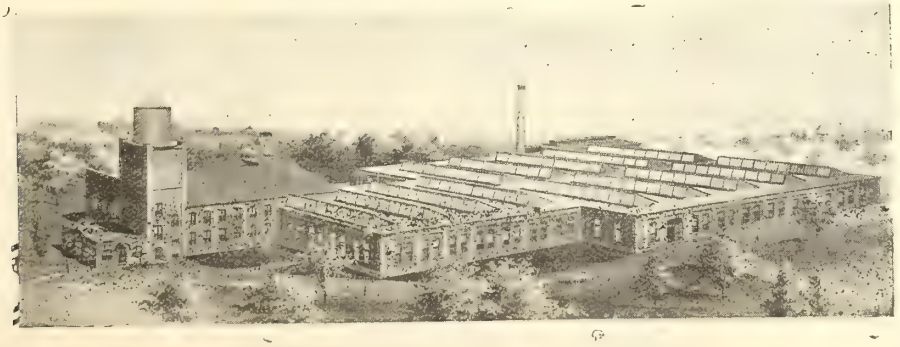


WOOL PRODUCTS

Kenwood Felts, Seamless Felts and Improved Tan Jackets

Whether market demands are for finish or maximum production, there is a KENWOOD Felt combination that will prove to your advantage.

Kenwood Mills Ltd., Arnprior, Ont.



KENWOOD MILLS LTD., Arnprior, Ontario

Charles Walm

Telephone — 499 BURY.

Telegrams — "PUMPS BURY."



Wet End of 232 in. Fourdrinier Machine at Abitibi Power & Paper Co.., Iroquois Falls, Ont.
Which has given an output as large as 90 tons in 24 hours.

HIGH SPEED

Western Canadian
Western U. S. A. } Representative

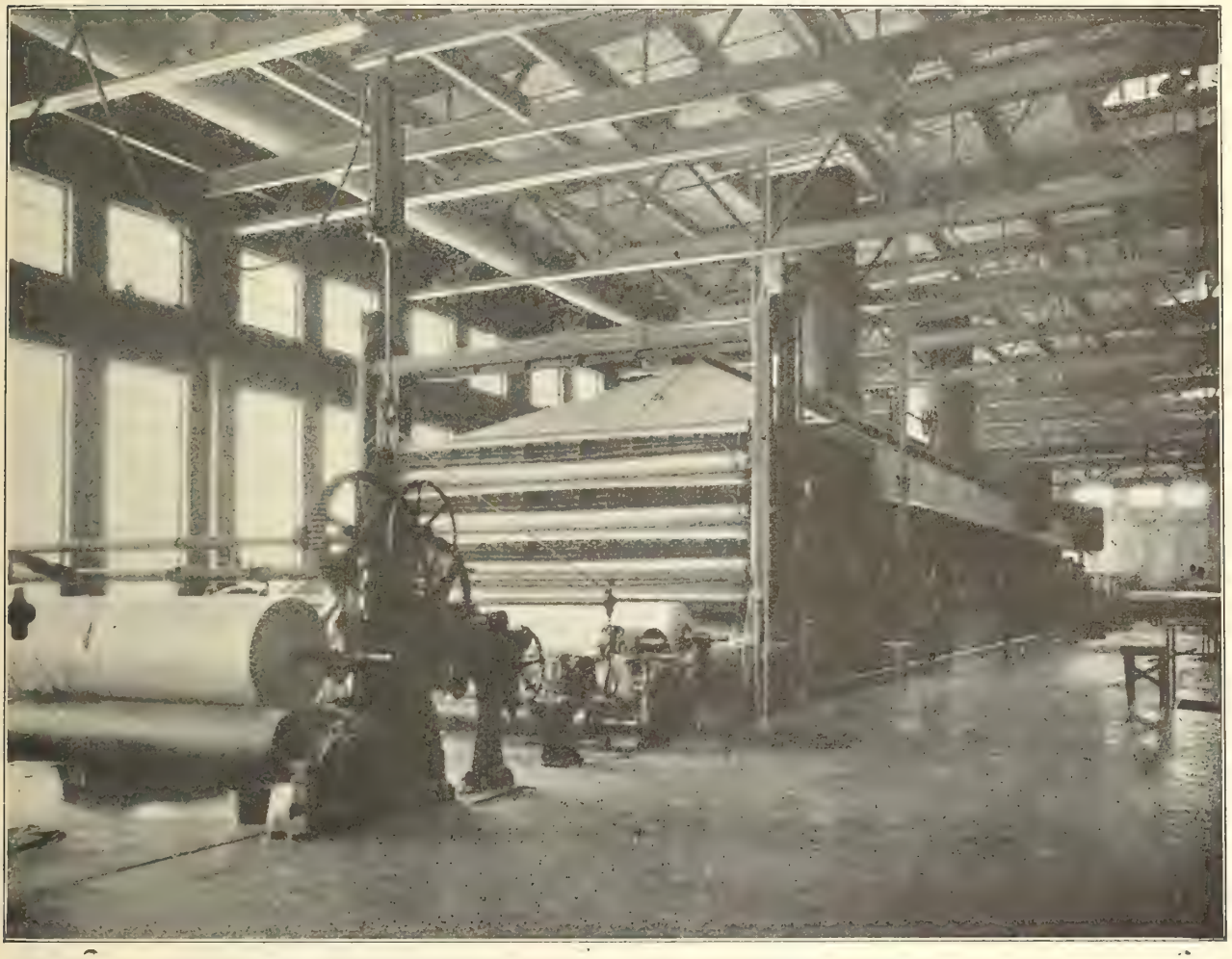
JAMIESON ENGINEERING CO.
London Building, Vancouver, B.C.

Paper Makers

ATLAS WORKS,

sley & Co. Ltd.

Cables — **PUMPS BURY, ENGLAND.**
Codes — 5th Edition, A B.C. Western Union.



Calenders, Reels, and Winder, on the Widest Machine in the World. There are two of these monsters at Iroquois Falls, Ont.

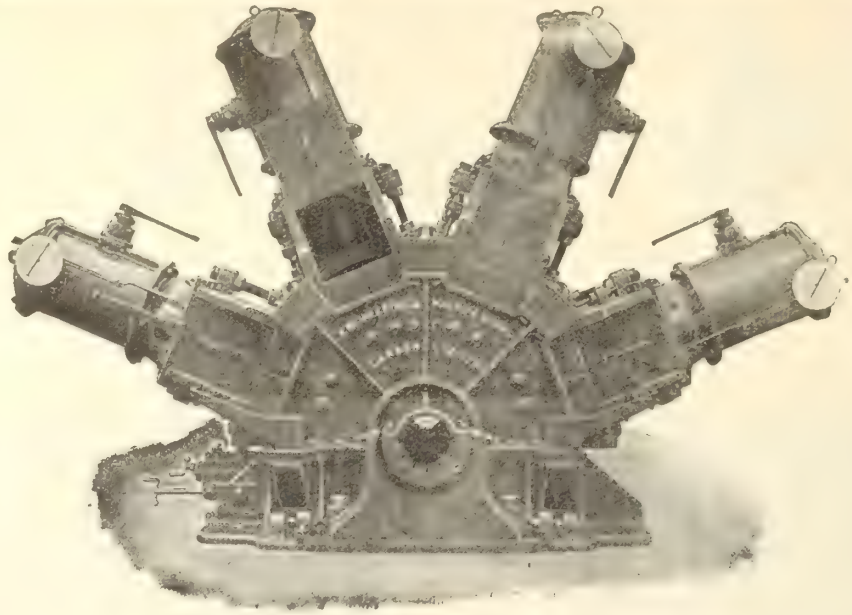
PAPER MACHINES

Engineers

BURY,

Eastern Canadian } Representative
Eastern American }
WILLIAM WHYTE,
39 Draper Ave., Montreal, Que.

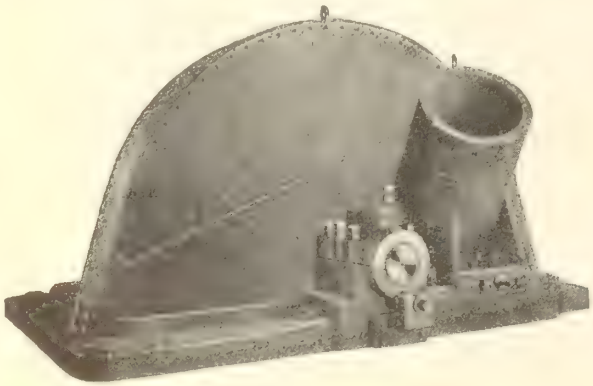
LANCASHIRE.



Built also in 3 pocket style

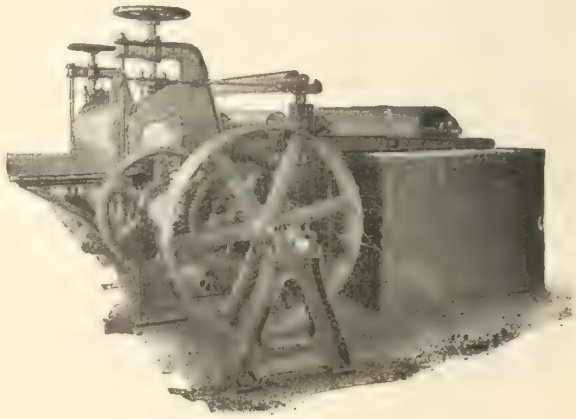
Does a 30% Increase in Output Interest You?

Here is an economy well worth your consideration. We are prepared to supply new 4-pocket Grinders or to convert your present 3-pocket machines into modern "Tidmarsh" improved 4-pocket Grinders which give you a 30 per cent increase in output with the same power and floor space and the same or less supervision. Patent pulp scrapers eliminate "flour pulp". Automatic Door openers, tapered pockets, are offered with several other exclusive betterments.



A Chipper with Exceptional Features

Produces clean, evenly cut chips, free from slivers and sawdust, due to our special improvements. Removable bed knife and heavier disc. The knives shear the wood instead of chopping it. There are years of 24-hour-per-day efficiency with this chipper. Sizes, 48 in., 84 in. and 90 in.



A Wet Machine with many Improvements

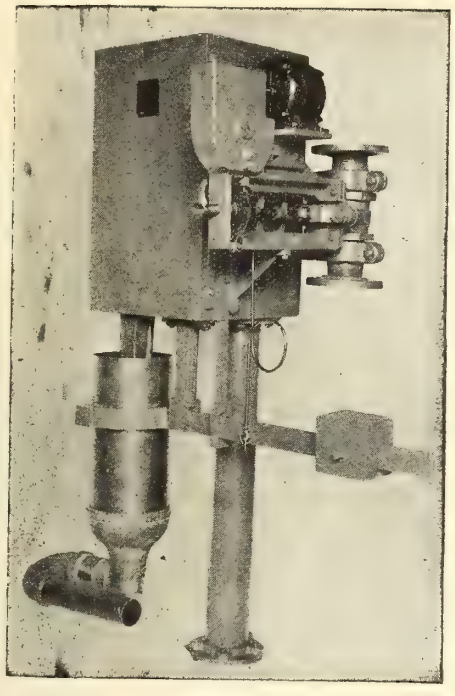
A rugged machine with several exclusive betterments. Interchangeable rolls, suction box, shower pipe, cut off knife and either steel, pine or cypress vats. Built in any width of face or diameter of mould. Single or double cylinders. Any type of drive.

Write us for prices on Cylinder Moulds, Chippers, Screens, Digestors, Tanks, Diffusers, Penstock and Plate Work of all kinds. Brass Castings, Electric Welding.

Engineering & Machine Works of Canada, Limited

St. Catharines, Ontario.

EASTERN SALES OFFICES:
Hall Machinery Co., Sherbrooke and Birks Building, Montreal



GUESSING is all right in its place,---
But don't guess at the **CONSISTENCY** of Your stock!
It is poor economy.
KNOW what it is, and **KEEP** it **UNIFORM** by using

THE TRIMBEY AUTOMATIC CONSISTENCY REGULATOR

(Patented)

More than 175 in use in the United States, Canada and Foreign Countries.

We are pleased to announce that Regulators to fill Canadian orders are now being manufactured for us by the Engineering and Machine Works of Canada, Ltd., of St. Catharines, Ont.

Address all correspondence to

Trimbey Machine Works

Glens Falls, N.Y.

54 PLASTOMETERS

Plastometers now form a part of the laboratory equipment of 54 rubber manufacturing companies in this country and abroad.

More than 100 of these instruments are in the hands of paper mills, who specify the density of their roll coverings by Plastometer readings.

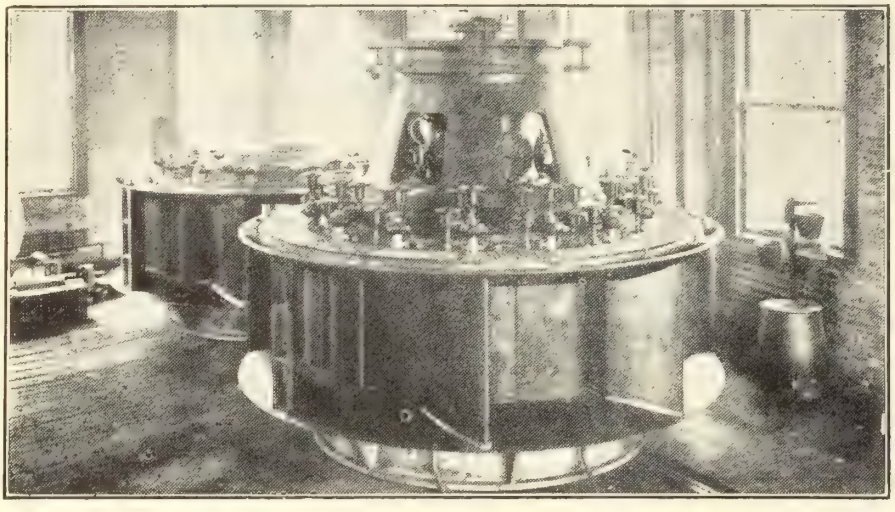
We should like to see a Plastometer in the hands of every mill, and for that reason we have decided to offer 100 instruments at a greatly reduced price. This offer to hold good for thirty days.

Ask Us

THE PUSEY AND JONES COMPANY.

WILMINGTON. DELAWARE.

HYDRAULIC TURBINES of
CANADIAN DESIGN AND MANUFACTURE



Modern Designs
Highest Efficiency
Substantial Construction
Continuous Service

We pay special attention to those little details which reduce the cost of maintainance and repairs to a minimum.

Our Hydraulic Turbines ensure a sound investment.

Boving Hydraulic & Engineering Company, Limited
LINDSAY, ONTARIO



The locomotive illustrated was recently built by us for John B. Smith & Sons, Limited, Toronto, Ont., dealers in lumber, lath, shingles, doors, sash, blinds, packing cases, etc., also store and office fittings, tanks, silos, and interior finish.

We are more than just locomotive builders.

Our experience puts us in a position to give you expert advice as to what particular type and size of locomotive is best suited your needs. This service is freely given.

There is vast difference between the mere purchase of a locomotive and buying locomotive service. When you buy from us you get both.

MONTREAL LOCOMOTIVE WORKS,
LIMITED

Dominion Express Building,
MONTREAL, Canada.

30 Church Street
NEW YORK City

STEAM

High Cost Wastage

We can positively show you

How you can conserve and cut steam costs that will startle you.

We apply common sense methods to Boiler Rooms and Steam Plants of all kinds.

Let us show you how it can be done.

Our Systems are unique.

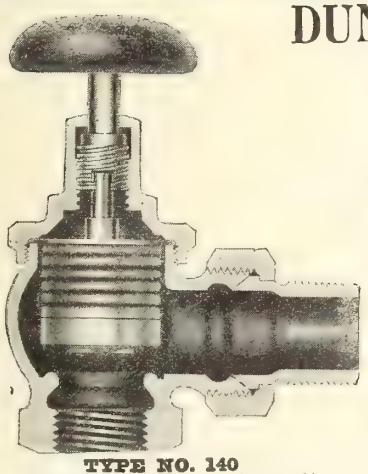
Canadian Combustion Company Limited

St. James Chambers, Church Adelaide Sts. TORONTO

ENGINEERS *MANUFACTURERS*

DUNHAM PACKLESS RADIATOR VALVE

with 3 interchangeable parts



TYPE NO. 140
Leakage of air into the radiators of vacuum systems is absolutely prevented by the "built-up" bellows construction. Steam, water, or dirt cannot come in contact with the valve spindle threads. Usable in any steam heating system.

Simply constructed and uncommonly accessible! The Dunham Packless Radiator Valve is a sturdy, dependable and durable valve.

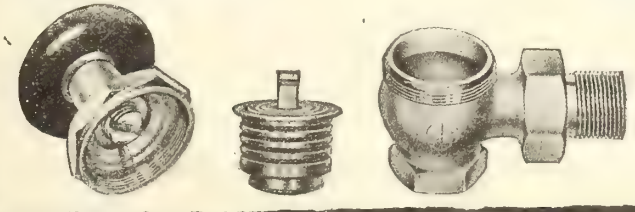
No springs or stuffing boxes. A remarkable "built up" bellows makes this valve absolutely leak proof. It can be fully opened or closed with approximately one turn of the vulcanized non breakable heat resisting wheel handle. It's equally efficient for top or bottom radiator connection on steam or hot water type radiators where low pressure steam heating is used.

Plant owners, executives and engineers are invited to write for the Dunham Hand Book which interestingly describes Dunham Heating Service and the application of Dunham Heating Specialties.

C. A. DUNHAM CO., LTD.

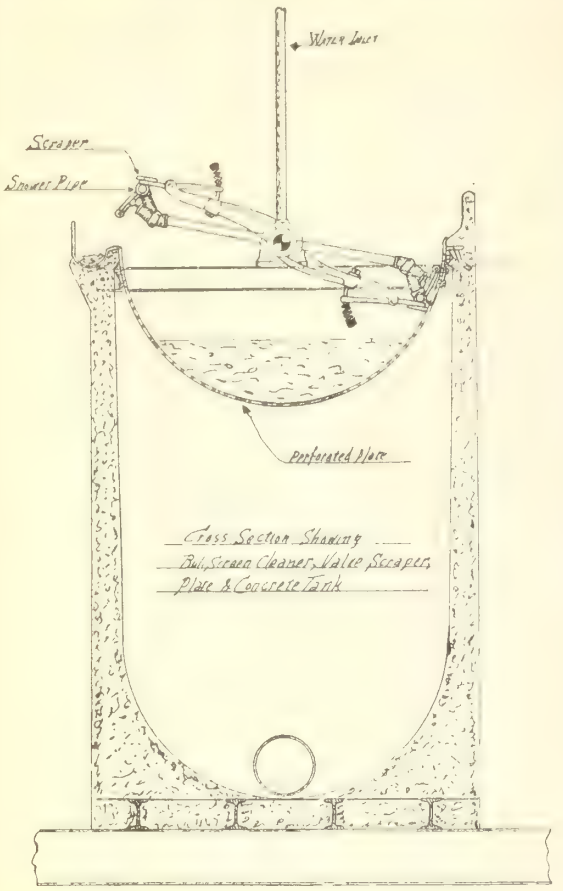
Toronto, Ontario

Halifax, Vancouver, Winnipeg, Ottawa, Montreal, Calgary
London, Eng: 18 St. Thomas St., S. E. I.



The DUNHAM REG. TRADE-MARK HEATING SERVICE

MADE IN CANADA



The Marvel Bull Screen & Cleaner

PERFECT RECOVERY | NO MORE WASTE

Space reduced by 2/3
Power reduced by 2/3
Production increased by 2%
Labor Entirely Suppressed

Ideal Patents Corporation
GRAND'MERE, Que., Canada

NO LOSS OF TIME | SCREENS any RAW MATERIAL

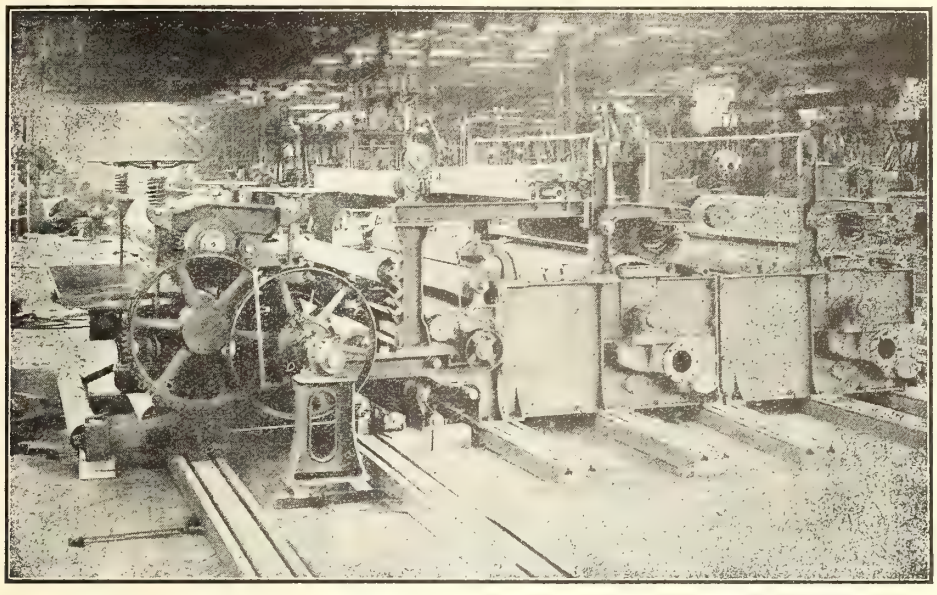
Certificate of Contentment
From
Laurentide Company, Limited
of GRAND'MERE, Que.

I am glad to take this opportunity of advising that the automatic shower, above, referred to, has been working satisfactorily for about two years and that it has increased the capacity of our sliver screen by at least 20% (Signed) J. O MASON,
Operating Manager.

Address all inquiries and orders to
Canadian Vickers, Limited
Montreal, Que., Canada

Penmans
FELTS
and JACKETS
For Pulp and Paper Mills

Penmans LIMITED
ST. HYACINTHE, QUEBEC
"Made in Canada"
MILLS AND SALE OFFICE, ST. HYACINTHE, QUEBEC



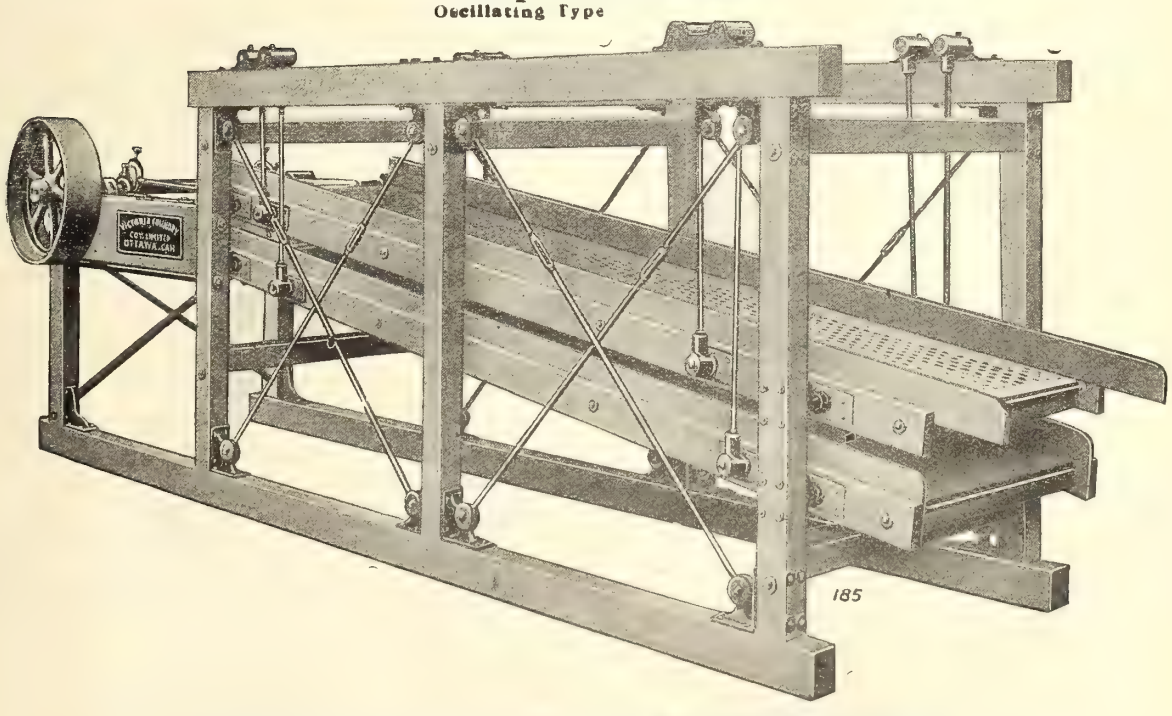
Two Cylinder Board Machine

Fast-Running Newsprint Machines,
Fourdrinier Machines for Fine Papers,
Cylinder Machines for Board,
Plunger type Stock Pumps,
Fan and Centrifugal Pumps for General Mill Service,
Screens, flat or rotary types,
Granite Press Rolls,
Pope Paper Reels,
Roll Grinding,

DOMINION ENGINEERING WORKS, LIMITED
MONTREAL — CANADA

Winnipeg Representatives:
Dominion Bridge Co., Limited, Canada Bldg., Winnipeg, Man.
Western Representative:
R. F. Mather, London Building, Vancouver, B. C.
(M-111)

Chip Screens
Oscillating Type



THE SIMPLICITY IS OBVIOUS — THE STURDINESS IS BUILT IN
victoria built screens are noted for their long life, low maintenance charges and capacity.
CIRCULAR STAIRS, EITHER HAND, ANY REASONABLE HEIGHT

We are pleased to be of assistance in your mill development. Write us; we are always available and can show you VICTORIA PRODUCTS at work any day you call.

VICTORIA FOUNDRY COMPANY Limited

General Engineering, Machine and Foundry Contractor
OTTAWA, Canada

CONSULTING ENGINEERS



HYDRAULIC AND STEAM POWER DEVELOPMENT, INDUSTRIAL BUILDINGS, HEAVY FOUNDATIONS, DAMS, BRIDGE PIERS AND UNDERWATER CONSTRUCTION

DRUMMOND BUILDING
MONTREAL

HERBERT S. KIMBALL, Mem. Am. Soc. C. E.
CONSULTING CHEMICAL ENGINEER
Specialist in SODA PULP MILL DESIGN
and
Chemical Equipment for Pulp and Paper Mills
177 STATE STREET, BOSTON, MASS.

PAPER MILL ARCHITECT AND ENGINEER
JAMES L. CAREY
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Codes: ABC 5th Edition and Western Union
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Power and Lighting Installation
Repairs, Rewinding, Rebuilding
Motors, Generators, Transformers
Our work has been proven by the largest Railway, Mining, Paper Mills, Ontario H.E.P.C. and Industrial Companies.
Large stock new and used A.C. & motors
Fully Guaranteed
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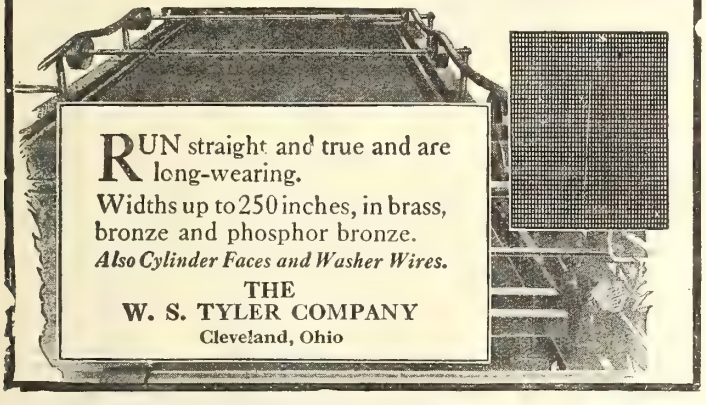
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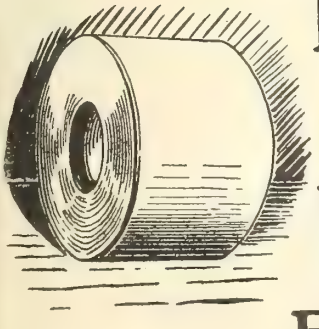




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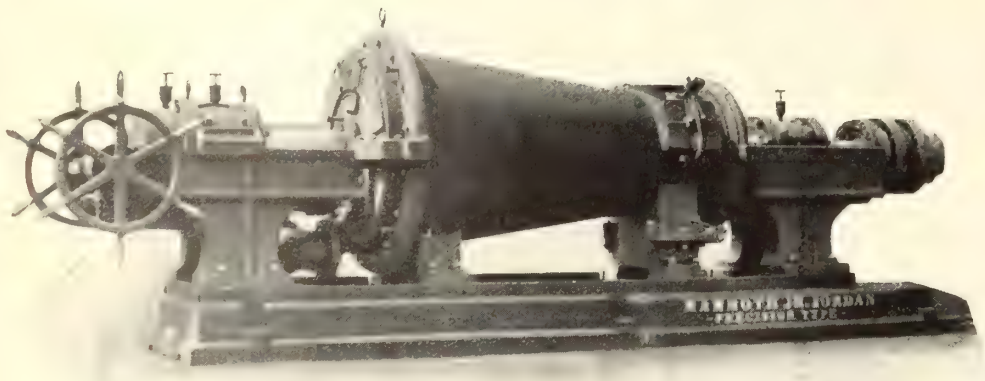
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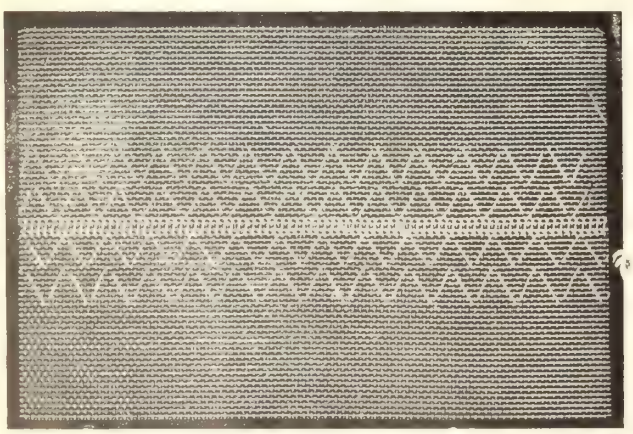
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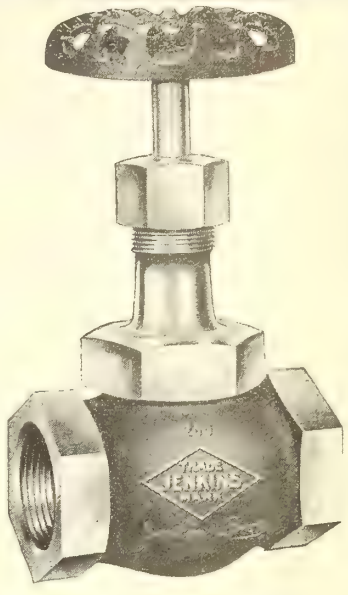
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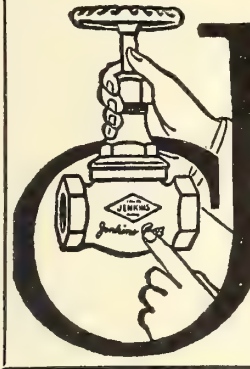
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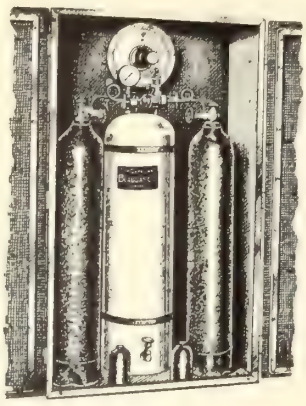
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VOL. XXI. Gardenvale, Que., May 3rd., 1923 No. 18

TABLE OF CONTENTS

Editoral:

Wages settled 449
A source of encouragement 449
A bit of philosophy 449
Is rapid expansion advisable? 450

Special Articles

A new all-electric paper mill 451
Applications of steam traps to paper machine dryers 457

News of the Industry

Harland company moves 456
Newspaper publishers' convention 459
Fiscal year ends well 460
Fire losses 460
Institute items 463
United States notes 466
What the bud worm kills 466
U. S. exports declined in 1922 466
Pulp and paper news 467
Wages in the newsprint mills 468
Heavy shipments of N. S. pulp 468
H. S. Taylor (portait) 468

The Woodlands Section

Forest Protection 461
Buy big timberland tract 461
Maritime forests are now depleted 462
U. S. forestry notes 462

Miscellaneous Information

The viscosity of lubricating oils 458
The Outline of Science (book review) 459
Equipment absorption statistics 460
Waterproof board 462
Avoidable wastes 463
Review of recent literature 464
Canadians and the U. S. tariff 472

The Markets

Canadian trade conditions 469
New York Markets 470

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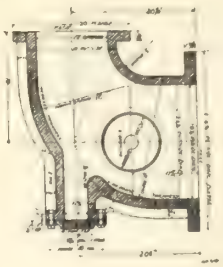
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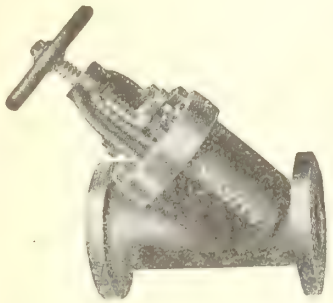
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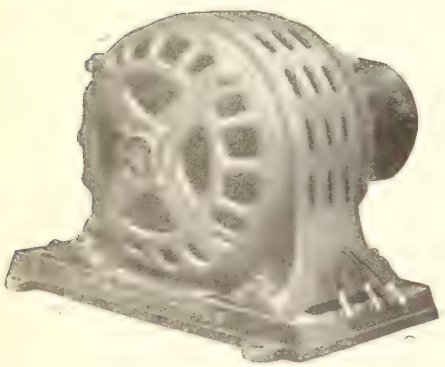
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:-: EDITORIAL :-:

WAGES SETTLED

A certain sense of security settles on the pulp and paper industry when the annual agreement as to wages is reached between the Unions and those manufacturers who employ union labor. These are in sufficient number, so that the union scale practically rules in the industry. Some mills pay more than the scale, others, because of the local conditions, pay less in money which may be the equivalent, however, in real wages. The new wage scale became effective on Tuesday, as detailed on another page.

Wages in many lines have been increased this spring, and prices are increasing also, as they must, because labor is the largest item of manufacturing cost. The higher the product is carried toward the ultimate finished commodity, the greater this factor becomes and the more insignificant the intrinsic value of the initial raw material, whether it be wood, cotton, wool or iron. In fact the labor factor is automatically boosted by the increased value of each intermediate product. But labor can keep the selling price stable, or at least minimize any increase by giving more efficient service — a little quicker handling of pulpwood, a little less waste in barking, a few more chips in the digester, a little more careful cooking so as to reduce waste in screenings or over-cooking, a little more attention to machinery so as to save lubricating oil and the time and material for re-babbitting and time lost in shutdowns, a little more care with water and steam to save power in pumping and waste of coal, even fewer stolen and broken lamps. These are a few of the things that come to mind. It is the spirit of economical production that will help keep down the price of goods.

The spinner, the weaver and the tailor get higher wages—and spend the increase for the higher prices in suits and coats, and higher priced boots, books, boxes, beans, bacon, and bread, because increases are contagious. Even the editor may get one someday.

The paper industry has been running along on a slim margin of profit, depending on capacity production to keep the balance on the right side of the ledger. But woodmen's wages were higher last winter, so wood costs more; pulpmakers' wages are increased, so pulp costs more; mill workers' wages are advanced, so prepared rag pulp is at a higher value; papermakers' wages are increased also, and since labor represents 85 per cent of the manufacturing cost of paper and material costs are also higher, who is going to pay the difference? Most mills either lost money for many months in keeping machinery going and men employed, or passed their dividends — which they owe their stock holders. The First National Bank of Boston says that wages are already at the war level. We don't want another period of inflation, but it looks as if something of the kind is being forced on us by those who think they are better off by having $1.25 in their hands to pay for a dollar book — or $6 for a silk shirt when a $2 or $3 cotton one would wear longer. The only antidote for higher wages is harder work. Let's ALL give it.

A SOURCE OF ENCOURAGEMENT

It is a source of encouragement to read that hydroplanes are to be used by the Province of Quebec in making a systematic inventory of the forest resources of the province. This, it is estimated, would be accomplished in a few years. A gratifying feature of the plan is the expectation of co-operation from the Federal government. A staff of air pilots and aeroplane mechanics should be kept in training, and there is no branch of the Service which lends itself better to the needs of the day than the Air Force.

A knowledge of our resources, as to where, what, and how much they are is fundamental to their development. A lack of this knowledge is responsible for more than one awkward situation today. No business man would conduct his business — he couldn't, lacking such fundamental information as an inventory. Yet the business men of Canada have let our governments conduct these departments on the basis of somebody's say-so and on out of date estimates that were often grossly incorrect in the first place. The result is that some super-generous concessions have been given and some that have been sadly insufficient. Both are bad. The way to improve the situation, and steer straight in the future is to KNOW what we have. The way to know is to make a survey, and the best way to make this survey is by using air craft.

Let the Provincial and Dominion Governments get together on a program and get busy.

A BIT OF PHILOSOPHY

It is just a year since Mother went away, and I have been thinking about it — not sadly or sorrowfully, but with many a smile. There are more happy memories in thinking of her than of anyone else.

A few weeks ago, while attending the Paper convention, I went out a few miles from New York to the place where we children gathered a year ago. I was

alone this time, and as I stood under the dogwood tree that was still bare — I thought. I was standing in Mother's presence and Father's too; thoughts of them are inseparable. But there was no feeling, no possibility of thinking, that Mother and Father were under the new-springing grass. Their presence was with me. Not the Doyle variety, but rather the spirit that had been growing into my life for forty years. I prayed — not for them, but for me, grateful for their lives and their love. An hour later I was back in New York.

Since then two lines of thoughts have run in my mind. I wondered a bit as to what was the best thing Mother left me. It did not take long to decide; in fact, before the station was reached I knew; faith in God and the love of Jesus. She brought them to me; it is up to me to keep them. They are probably the most potent factors in life, the basis of nobility of character and of fair dealings among men.

And my mind reverted to a sudden surge of feeling as I stood by the grave side. It brought up the query: Why do hearts break? Perhaps it is foolish to apply an engineering idea, but may it not be due to internal pressure — emotion, or love pressure, if you like. Just think of the heart — the emotional "heart" is closely identified with the physical, as a boiler running under normal pressure, when suddenly one of the main steam outlets is closed. This may have been enlarged to take practically the whole flow if one has been watching by the sick bed of a loved one. It seems that one of three things may happen; the boiler (heart) breaks, the pressure is relieved by enlarging old or making new outlets, or the fires are drawn and the heart grows cold, the boiler rusts.

This is just a little philosophy; it may start some one thinking about things other than prices, profits, and plant troubles, and bring him back to them with a calmer, clearer mind.

IS RAPID EXPANSION ADVISABLE?

As our readers are aware, many newsprint machines are either being installed or on order. This involves a large increase in production, and naturally raises the question — What, if any, effect will this enlarged production have on the industry? Is there in fact, any danger of Canadian newsprint going beyond the saturation point, with the result of creating excessive competition and unprofitable prices?

Those engaged in the industry are by no means agreed on this policy of expansion. There are those who are of the opinion that the Canadian mills should go slowly, that there is a real danger of overdoing it, while others believe that we have not yet reached the point where Canada should call a halt, and they are backing this view by installing and ordering additional machines. Besides the existing companies, others are being organized to go into the newsprint business.

It is pertinent to point out that at various stages of the expansion of the newsprint trade, predictions have been made to the effect that over-production was at hand, but the larger output has been gradually absorbed, and today Canada is turning out newsprint at a greater rate than at any time in the history of the industry. While this is true, it is equally true that this country cannot go on indefinitely increasing production. The capacity of our customers to absorb newsprint must be computed on established facts, which are easily obtained. To manufacture in excess of those requirements is to incur hazards which are not in the interest of the industry as a whole. If the full program of additional machinery, as outlined by the existing companies, is carried out, it is obvious that new markets will have to be opened up. Where are they to be found, — Great Britain, South America, Australia? In the alternative, fresh customers will have to be found in the United States, and this market is likely to be affected by an influx of Scandinavian paper that will be released by the expanded capacity of British mills.

It is argued by some that while for a time, a surplus of production and lower prices will be inevitable, matters will right themselves in the long run. This assumption is based on the view that reduced values will involve the closing down of American mills, or the switching of these mills to other classes of paper. Such mills will, in fact, be unable to do a profitable business at the low prices — they will not be in a position to compete with Canadian mills, with their lower cost of production, due to abundant and convenient supplies of pulpwood, combined with cheap power. The effect will be to eliminate a number of competitors, to advance prices, and to give an enlarged market for Canadian newsprint. Such is the prediction — how it would work out is another story. It would seem to be the part of wisdom to expand the industry gradually as population and consumption per person increase, rather than by jerks, with attendant dislocation of relations between supply and demand, cost and selling price, producer and consumer.—F. H. D.

COBWEBS

How much time, money and efforts will be lost for want of a good map of the Rouyn area where gold has been discovered? In few weeks an aeroplane photo-map could be made that would accurately delineate this district and serve not only the prospectors but the timber operators who are interested. In no other way can so complete and accurate a map be obtained so cheaply.

The special Convention numbers of Paper Trade Journals, Paper Mill, and Paper have been received. They are certainly fine. We congratulate the editors and publishers of each.

A NEW ALL-ELECTRIC PAPER MILL

By A. H. WHITE * and R. H. ROGERS †

Samuel de Champlain, as he was exploring from Quebec toward the Great Lakes, discovered a broad river coming into the St. Lawrence from the north, divided at its mouth into three channels by two islands. He founded a settlement here in 1634 and called it Trois-Rivieres, the Three Rivers of English-speaking people. That it is a strategic point for the production of pulp and paper is proved by the number of successful mills in the vicinity and the rapid, healthy growth of the city since their coming. The St. Maurice River, clear and broad, taps the great forests of the north and furnishes the vehicle that brings the logs to the saws. Its energy, converted at Shawinigan Falls and Grand'Mere, not far from its confluence with the St. Lawrence, furnishes 275,000 kw. of hydro-electric power to neighboring industries. The clearness of its water materially aids in the production of a "bright sheet," and steam boilers fed from the St. Maurice show the sustained efficiency that can come only from an ideal feed water.

The transportation facilities here, midway between Montreal and Quebec, are excellent. The St. Lawrence furnishes a water route for incoming pulp wood and for finished paper to Great Lakes ports, Atlantic Coast and European cities during seven months of the year. Fuel-oil tankers steam up from the sea to dock and discharge to mill storage tanks. The canal route via Lake Champlain furnishes a much-used outlet directly to New York City. The Canadian Pacific Railroad with ample sidings keeps the local industries in touch with the whole continent.

In such a setting is the newest mill of the International Paper Company, known as the St. Maurice Lumber Company paper mill. It is the business of this plant to produce news paper composed of about

* Chief engineer the International Paper Company.
† Power and Mining Department, General Electric Company.

NOTE: The "Pulp and Paper Magazine" is indebted to the "Electrical World" for the use of these excellent cuts.



Aerial view made for the Pulp & Paper Magazine by Fairchild Aerial Service, of the pulp and paper mills of the St. Maurice Lumber Co. at Three Rivers (subsidiary of the International Paper Co.)

75 per cent mechanical (ground-wood) pulp and 25 per cent chemical (sulphite) pulp, made from logs that average about 60 per cent spruce and 40 per cent balsam.

The four 165-in. paper machines, to which the whole organization and structure are subservient, were put in production in the past summer — the last one in August. They are already making over 275 tons of "news" per day, and their ultimate capacity, after the installation of the seventh grinder unit and the third digester, will be more than 300 tons per day. The present daily production represents more than 1,200 acres of paper, or a sheet 12½ ft. wide and 875 miles long, turned out at the rate of over 36 miles per hour.

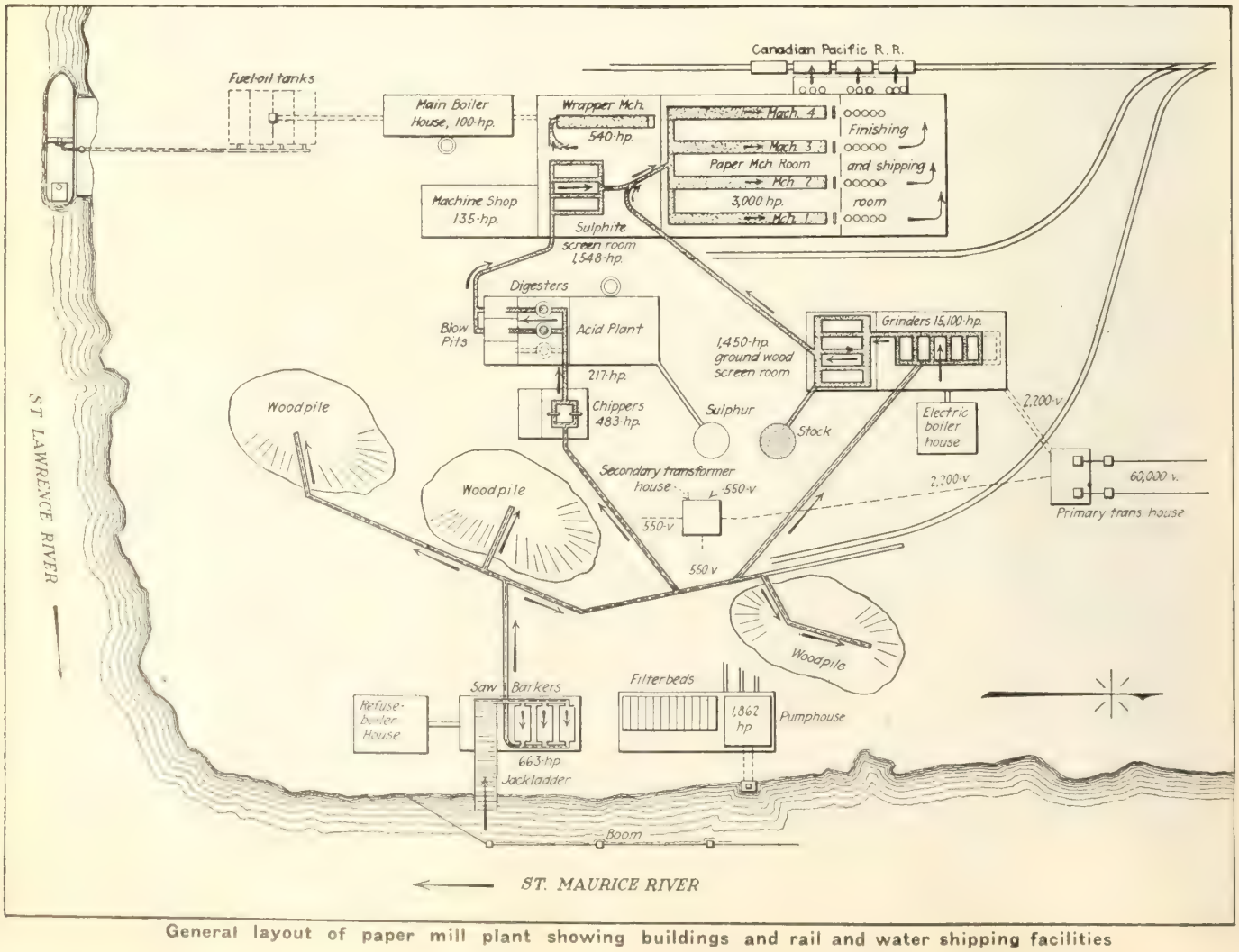
One ton of "news" as now being produced at this mill (based on one month's figures) requires a little over a cord of wood, 1,347 kw-hr. of hydro-electric power, 7.21 tons of steam produced by 3⅛ barrels of fuel oil for mill heating, pulp cooking, paper drying and for direct-current electric power for driving the paper machines; fifteen man-hours of labor and supervision, and five and a quarter minutes for production.

The logs, 13 ft. to 16 ft. in length, are sawed and barked during the summer months, and the surplus over current demand up to 66,000 cords can be stored for winter. The four fuel-oil tanks hold 150,000 barrels, or more than six months' supply of Mexican residue. Two tranmission lines and transformer banks can furnish 24,000 kw. of hydro-electric power. The pump and filter plant has a capacity of 20,000,000 gal. of filtered water per day. The main boiler house can turn out more than 6,000 boiler-horsepower continuously.

The outstanding feature of this mill is the extent to which electric power is used, together with the novelty of many of its specific applications. Every application of power is electric, and it is the only 100 per cent electric paper mill in the industry.

Two 60,000-volt, 60-cycle, three-phase transmission lines come from the north to the main transformer house at the northern limits of the mill yard. Six single-pole, 600 amp., 110,000-volt disconnecting switches lead to the two three-phase, four-tank, 60,500/72,500-volt lightning arresters, which are of the electrolytic outdoor type. Six 600-amp. cylindrical suspension outdoor choke coils are interposed just outside the 100,000-volt wall bushings. After going through two 600-amp., 66,000-volt, triple-pole, single-throw, remote-control oil circuit breakers the voltage is stepped down from 66,000 to 2,300 by means of six 4,000-kw. oil-insulated and water-cooled transformers.

Well protected in a room at the end of the transformer house is the four-panel instrument board, where the incoming power is metered on the 2,300-volt side of the transformers. The instruments installed are watt-hour meters, indicating and curve-drawing wattmeters, indicating voltmeters and ammeters, ground wattmeters, indicating voltmeters and ammeters, ground detectors for the cable system and an indicating power-factor meter. On these panels are



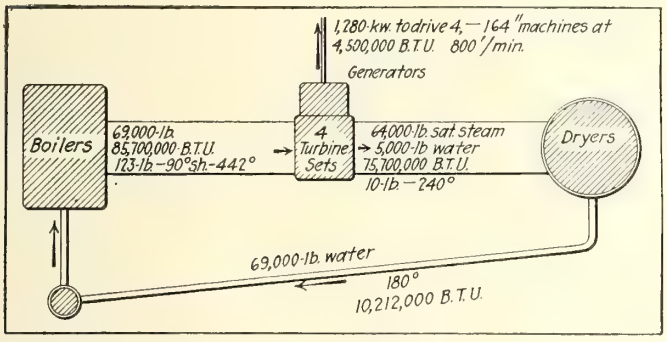
General layout of paper mill plant showing buildings and rail and water shipping facilities

also mounted all necessary instrument protective devices. The entire equipment of this main transformer house was furnished by the Canadian Westinghouse Company with the exception of the transformers which were built by the Westinghouse Electric & Manufacturing Company.

A tunnel 150 ft. long takes 2,300-volt power from the main transformer house to the switch house alongside the wood grinder room, where there is a connected load of 15,100 hp., with another 2,400-hp., unit on order. The conductors through the tunnel are eight three-conductor, 1,000,000-circ. mil., 2,300-volt cables.

Secondary Transformer House for Mill Supply

There is a secondary transformer house located conveniently for general distribution to the mill and connected to the main transformer house, 960 ft. away by two sets of twelve 4-in. ducts with manholes about

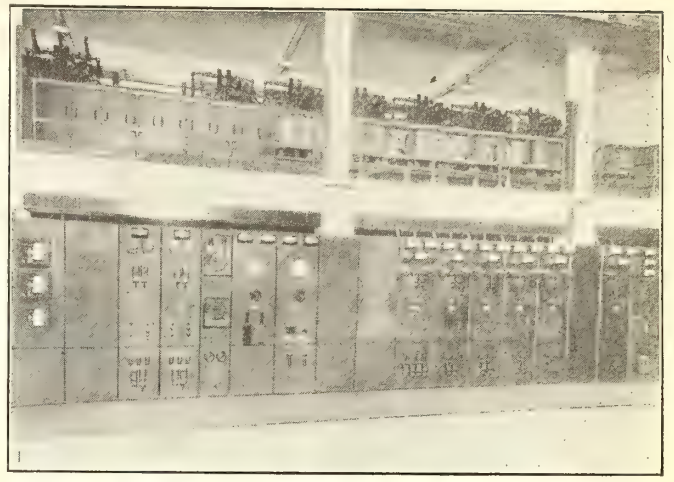


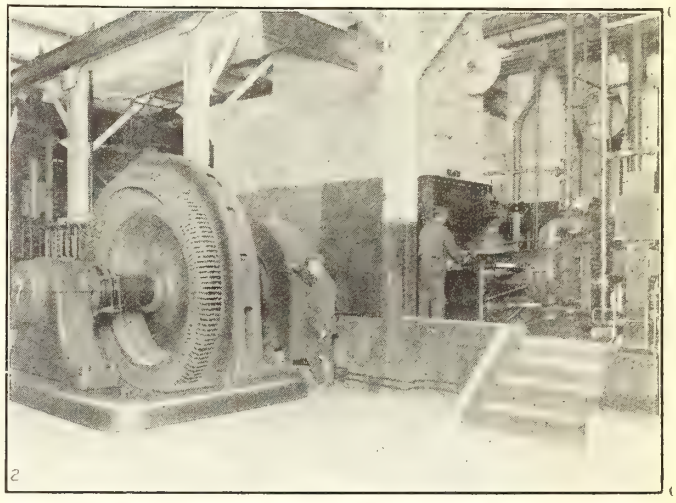
How the heat is distributed in the steam cycle used in the mill

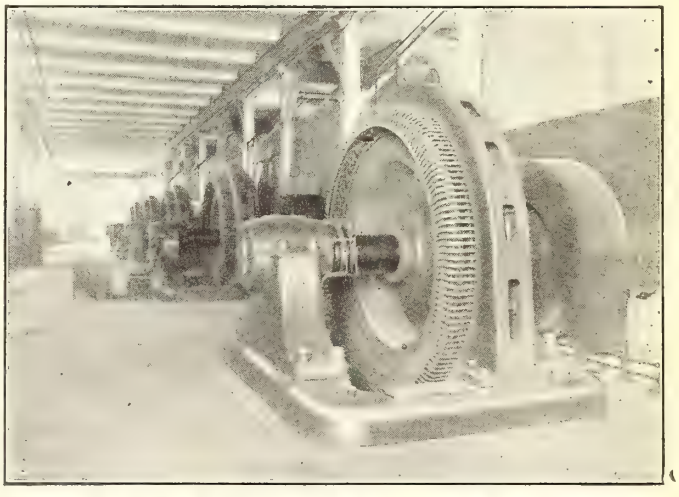
150 ft. apart. Twelve ducts each contain a three-conductor, 600,000-circ.mil, 2,300-volt cable; five ducts each contain a three-conductor, 300,000-circ.mil, 600-volt cable, and another contains a two-conductor, No. 2/0 cable for 125-volt direct-current switch control.

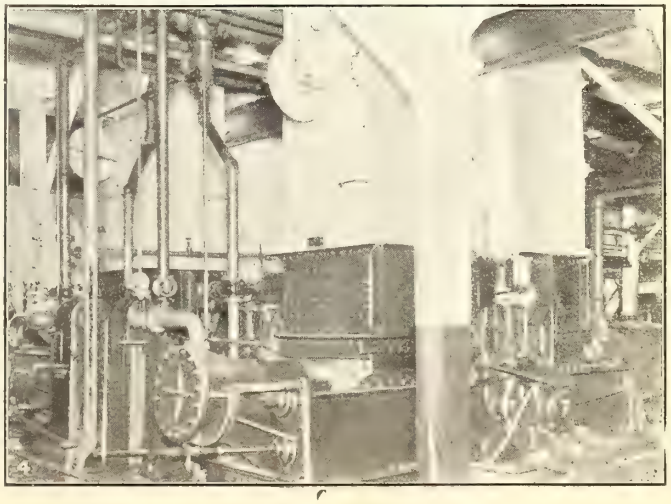
The secondary transformer house steps the 2,300-volt circuit down to 550 volts for general distribution throughout the mill and yards. There are mounted here twenty-four 1,200-amp., single-pole, single-throw, 2,200-volt disconnecting switches, twelve 4,000-amp. similar switches and two 2,000-amp. automatic solenoid-operated oil circuit breakers. The transformers are four in number, rated at 2,000 kw. and 2,200/600 volts, and are single phase, oil-insulated and water-cooled. The fourth transformer can be phased in with any other two. There is a 10-kw., 550-110/220-volt lighting transformer installed here, as well as a battery-charging set and a storage battery for switch operation.

Protection is provided by twenty-eight 600, 400 and 300 amp., triple-pole, single-throw, oil circuit breakers, very neatly and conveniently connected and mounted.









Synchronous Motors Grind the Wood

No. 1. Main switchboard in ground wood mill controls six synchronous motors aggregating 14,400 h.p.

No. 2. Hydraulic rams force the logs against the synchronous motor-driven grinder. At right is automatic motor load regulator which is actuated by hydraulic pressure.

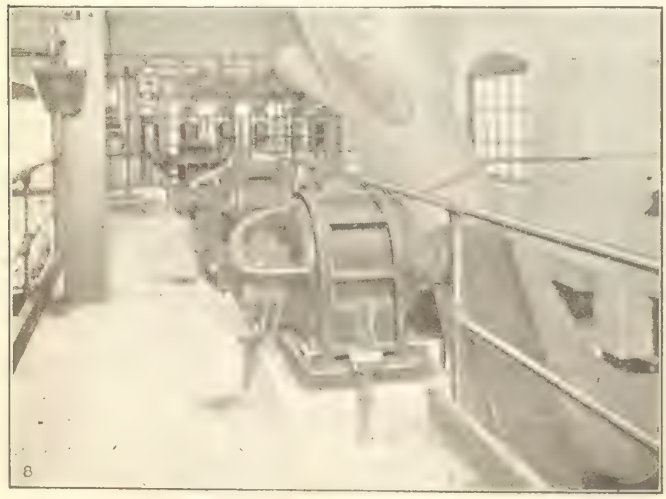
No. 3. Six of the seven 2,200-volt, 2,400-h.p. synchronous motors which drive pulp grinders.

No. 4. Every three hours a stone-burring lathe is automatically brought into operation without stopping production. The toothed wheel in the magazine feeding pulp grinders registers the cords of wood fed to machine.









Eighteen switchboard panels carry curve drawing and indicating instruments for metering the power to various mill divisions.

Four principal lines of ducts radiate from this secondary transformer house and branch off as required to serve the widespread areas of motor applications. The aggregate length of 4-in. ducts, including spares, installed is 15 miles, with access through about thirty-five manholes.

The connected three-phase, sixty-cycle induction motor load totals 34,000 hp. in about 400 motors, practically all controlled by oil switches and compensators or drum controllers so installed that the motor and its connected load is in sight from the control point. An important detail here is that all fuses are eliminated.

Three electric-steam generators are being erected in a separate boiler house close to the 2,300-volt grinder-room switch house. These boilers will have a combined capacity of 1,200 boiler-horsepower and can take 12,000 kw. They will have two functions. They will make available to the mill in the form of steam, at no extra cost other than overhead, the "below-peak" energy that would otherwise be paid for and not used. This procedure, of course, reduces the fuel consumption at the main boiler house to that extent. On Sundays, or at any other time of light steam demand, the 1,200 boiler-horsepower of the electric-steam generators will make it possible to shut down all the oil-fired boilers.

A log boom anchored to piers off shore harbors the logs floated down from the logging camps, and from this inclosure they are hauled sidewise in close formation on a multiple chain conveyor or "jack ladder" to the saws, which can be elevated out of the way of ice during the winter. At the head of the jack ladder they are transferred to another multiple-chain conveyor, which is equipped with jaws that hold securely the individual logs and carry them past the three "slasher" saws that cut them into 4-ft. lengths.

As the 4-ft. logs, end to end, leave the saws, they fall onto a conveyor which takes them endwise to the barking drums, of which there are three. These are huge tumbling barrels having straight-channel iron staves with 2-in. openings between. The drums are mounted horizontally. Both ends are open, and the logs are continually fed into one end and are continually falling over the stationary dam across the other end. The drum is rotated, and at the same time a spray of water is played on the logs. The bark is rubbed, beaten and washed from about 90 per cent of the logs in this process, and those imperfectly barked are returned by a conveyor to the same drums.

A maximum of 16,000 logs, together measuring more than 50 miles in length, has been drawn from the river,

Grinding Wood and Cleaning Pulp

No. 5. One of two 220-ft. conveyors above charging floor in ground wood mill for distributing logs to service piles.

No. 6. From the 200 service piles the logs are placed in the magazine grinders from the charging floor in the ground wood mill.

No. 7. In the screen room there are four Sherbrooke revolving screen knotters in the rear of four rifflers each having eleven submerged dams for extracting sand.

No. 8. Six motors of 15 h.p. each drive the deckers. Controllers, meters and switches are in the background.



Chip Screens Grade the Chips and Return Oversize Chips to the Chippers



Logs Received by Rail are Handled by a Stacker and Conveyor System

sawed, barked and delivered to the yard conveyors in a day by this wood-preparing plant. The barked logs are then taken in charge by the yard system of cable conveyors, which convey them to the three piles, stack, reclaim and deliver them to the sulphite and ground-wood departments. These cables aggregate 3,000 ft. in length in ten outdoor units.

The motor controllers and protective devices are concentrated in a special control house from which all the conveyor drives can be seen. The control units and instruments are thus protected from vibrations and shocks that they would be subject to if mounted on the conveyor structure.

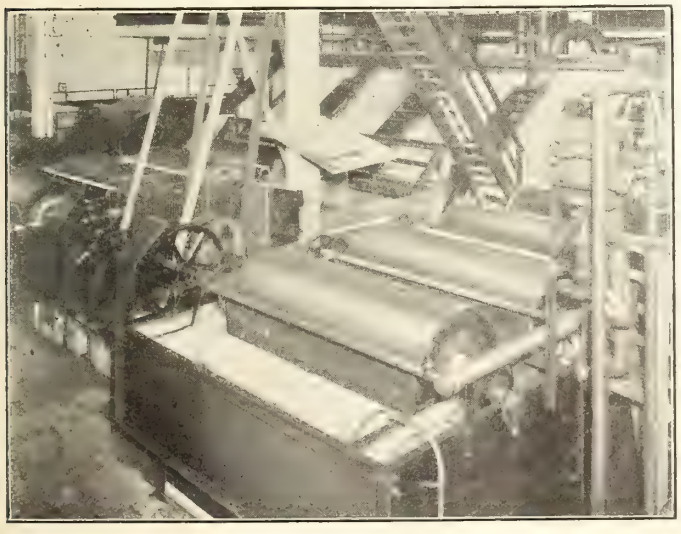
The barking drums listed in Table I and all the yard conveyor motors in Table II are, it will be noted, of the wound-rotor type on account of the very heavy starting duty with which they are at times confronted. This is especially true of the yard conveyors, which may have to start with a full load of logs or when impeded with snow and ice. Drum controllers are used in the secondary windings with overload oil switches in the primary windings, thus avoiding the use of fuses.

TABLE I — ELECTRIC MOTOR DRIVES IN WOOD-PREPARING PLANT

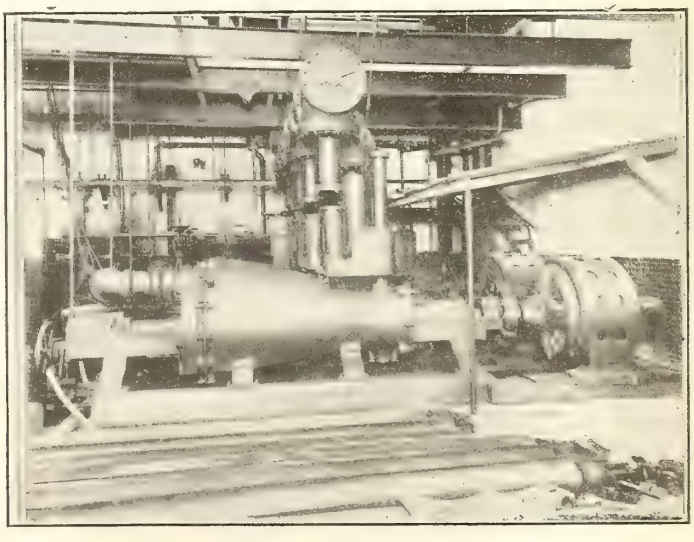
(Total connected load, 663 h.p., 550 volts, alternating current.)

Log haul, three saws and knife barker:	
Belts; one 100-h.p., 690-r.p.m., squirrel-cage.	C. W.*
Conveyor, saws to barker:	
Gears; one 25-h.p., 860-r.p.m., wound rotor	C. W.
Three barking drums:	
Belts and gears; three 150-h.p., 690-r.p.m., wound rotor	C. W.
Conveyor, return logs to barkers:	
Gears; one 10-h.p., 860-r.p.m., squirrel-cage.	C. W.
Conveyor, wide for bark:	
Gears; one 25-h.p., 860-r.p.m., squirrel-cage.	C. W.
Conveyor, logs to yard conveyor:	
Gears; one 10-h.p., 860-r.p.m., squirrel-cage.	C. W.
Conveyor, from knife barker to yard conveyor:	
Gears; one 25-h.p., 860-r.p.m., squirrel-cage.	C. W.
Conveyor, bark and sawdust to boiler house:	
Gears; one 15-h.p., 860-r.p.m., squirrel-cage.	C. W.
Saw sharpener:	
Gears; one 3-h.p., 1,800-r.p.m, squirrel-cage.	Cr. Wh.†

* C. W. indicates Canadian Westinghouse. † Cr. Wh. indicates Crocker-Wheeler.



In the Sulphite Screen Room are Five Inclined Screen Pulp Thickeners and Two Washers



As a Reserve in the Sulphite Screen Room are Four Motor-Driven Jones-Jordan Engines

TABLE II.—ELECTRIC MOTOR DRIVES ON YARD CONVEYORS

(Total connected load, 360 h.p., 550 volts, alternating current.)

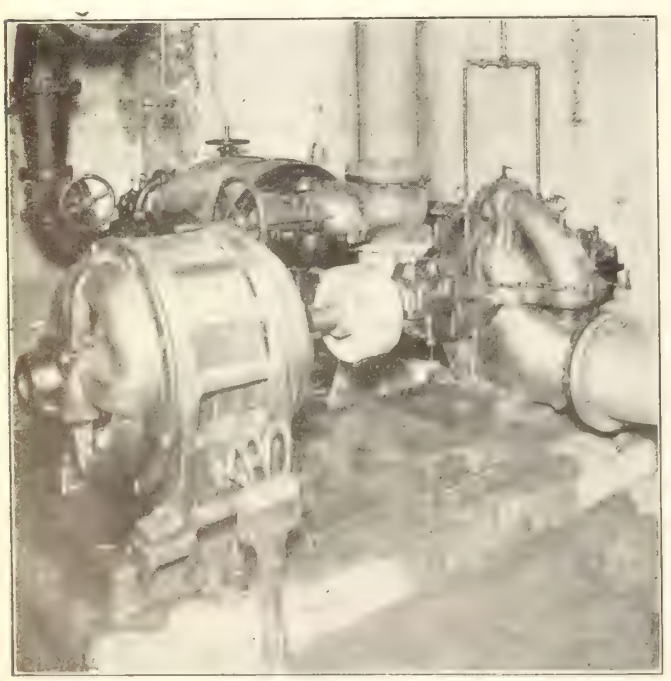
Wood-preparing plant to storage system:	
Gears; one 35-h.p., 860-r.p.m., wound rotor.	C.W.*
To south pile:	
Gears; one 25-h.p., 860-r.p.m., wound rotor.	C. W.
To middle pile:	
Gears; one 25-h.p., 860-r.p.m., wound rotor.	C. W.
To north pile:	
Gears; one 50-h.p., 860-r.p.m., wound rotor.	C. W.
Along north pile:	
Gears; three 35-h.p., 860-r.p.m., wound rotor.	C. W.
Three stackers:	
Gears; three 50-h.p., 860-r.p.m., wound rotor.	C. W.
Portable conveyor:	
Gears; one 15-h.p., 860-r.p.m., wound rotor.	C. W.
From storage system to chipper building:	
Gears; one 25-h.p., 860-r.p.m., wound rotor.	C. W.
From storage system to grinding floor:	
Gears; one 50-h.p., 860-r.p.m., wound rotor.	C. W.

* Canadian Westinghouse.

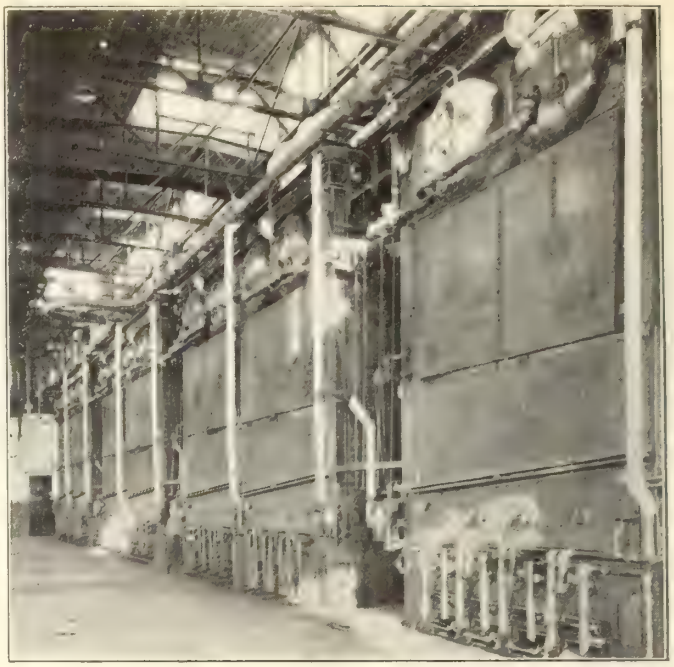
Pump and Filter Plant for Water Supply

For supplying the enormous amount of water necessary for paper production a pump and filter plant is installed at the river bank. The pump pit contains ten pumps with a combined capacity of 55,800 gal. per minute, or enough to supply a city of 700,000 population. The raw water and fire pumps are below the low-water level of the river. The protective devices, meters and control elements are installed on a gallery overlooking the pit, and they are thus above any danger of flooding. Power is supplied from the secondary transformer house, about 150 ft. away, through three three-conductor, 300,000-circ.mil. 600-volt cables and two three-conductor, 200,000-circ.mil cables. The twenty sand-filter beds occupy an extension, 40 ft. x 180 ft., and they can filter 20,000,000 gal. of river water a day.

The service rendered by this pumping plant is vital, and the pump-pit environment is so exacting from the electrical standpoint that this equipment received the most critical attention in its selection and installation.



Motor-Driven Centrifugal Pumps are Required for Handling White Water and Stock



In the Main Boiler House are Eight 500-Boiler-Horsepower Oil-Fired Boilers

The two electric fire pumps are supplemented by a steam fire pump designed for 1,500 g.p.m. against a head of 280 ft. Wherever it is possible the pumps are so designed and connected that they can pump to the fire mains. Cross-connection with the city provides for mutual protection. The whole rotating weight in the vertical pumps is carried on suspension bearings at the tops of the motors. These bearings have never required adjustment.

The main boiler house lies along the railroad siding between the machine room and the fuel tanks near the southern extremity of the yard. A battery of eight 500-hp. B. &. W. water-tube oil-fired boilers extends in a single row down the center with a clear clean space all around them. An inclosure at the north end contains the active electric and the stand-by steam boiler-feed pumps, the fuel-oil pumps and the steam-turbine-driven 180-kw., 550-volt alternating-current emergency generator which is used for lights and machine shops should the hydro-electric power be interrupted.

About 30,000 gal. of fuel oil are being used per day to generate about 5,800 boiler-horsepower from seven boilers at 1.66 load factor. The normal boiler pressure is 125 lb., 95 deg. F. superheat, and the evaporation rate is 14 lb. actual, 15½ lb. equivalent. The draft is 0.1 in. of water, CO_2 content of flue gases 13 per cent, and temperature of the flue gases 550 deg. F. The output of two boilers is required for heating the mill in winter. The feed water is admitted at 205 deg. F. from the dryers without heating and is made up from soft filtered river water.

(To be continued)

HARLAND COMPANY MOVES

The Harland Engineering Co., of Canada, Limited have removed their office to much more commodious premises at 291. Mountain St., Montreal, P.Q. to which address all communications from now on should be addressed. Telephone is now Uptown 3007.

Application of Steam Traps to Paper Machine Dryers

By L. D. GOFF, Armstrong Machine Works,
Three Rivers, Mich.

To insure the best of satisfaction, a steam trap installed on paper machine dryers should be protected by an efficient separator which will not only deliver dry steam to the paper machine but will remove a considerable portion of the oil and sediment usually carried by exhaust steam. Although the type of trap described here has the ability to handle quantities of oil, grease and sediment which would prove fatal to other types of traps, yet it has certain limitations, and for this reason the installation of an efficient separator is always recommended.

To meet a demand for an economical and efficient drainage system for paper machine dryers, where the temperatures carried on the machine may be easily and accurately controlled, where maximum efficiency is desired, an installation is suggested using steam traps in connection with a vacuum pump as shown on the diagram. The operation of this is as follows:

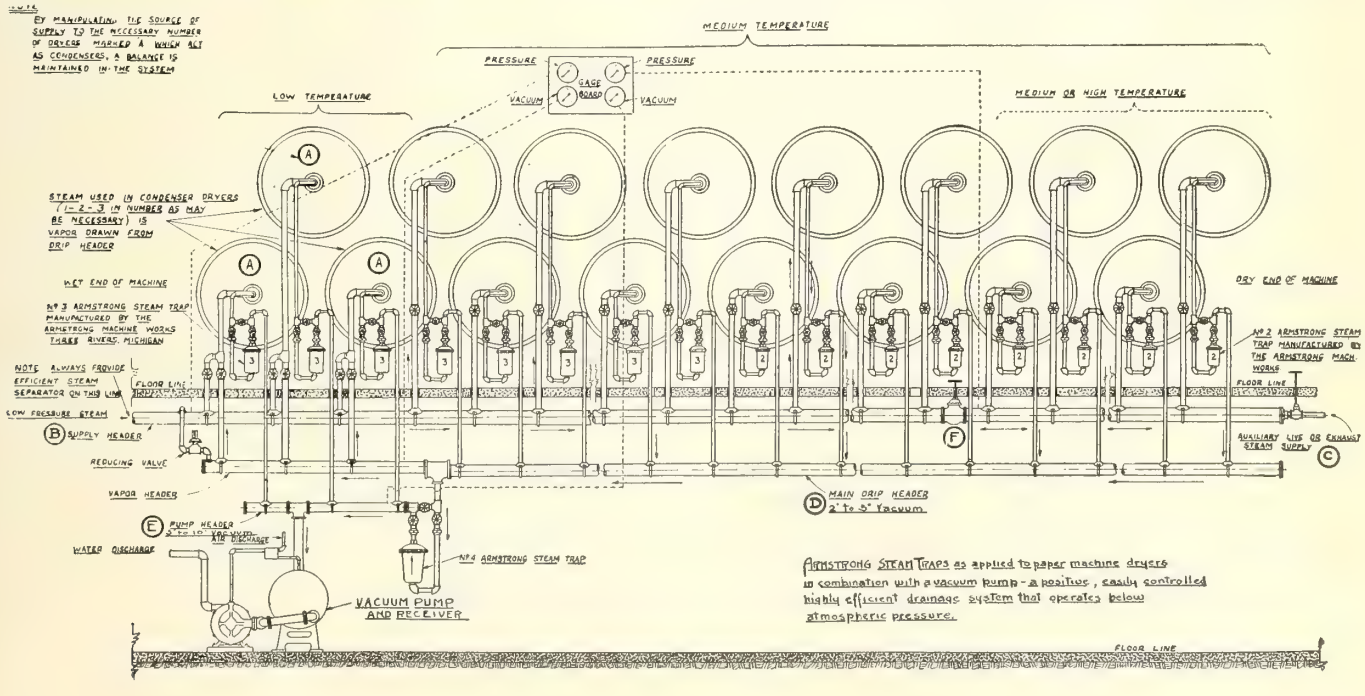
The illustration shows merely a diagramatic sketch of sixteen dryers on a paper machine. The method of draining paper machine dryers may be applied to any paper machine regardless of the number of dryers.

The piping arrangement is so planned that the machine may be divided into any number of sections and different temperatures carried on each section. Three or four dryers on the wet end of the machine are connected to be used as condensers, the main steam header is divided at the dry end of the machine by a valve (F) that high pressure steam may be carried on a predetermined number of dryers. All dryers are drained with traps, and all but those used as condensers discharge into the main drip header (D). All dryers, with the exception of those used as condensers, are supplied through the main steam header (B), this being divided at the dry end as mentioned above so that a higher pressure may be carried on the dry end section of the supply header (C), than is carried on the balance of the header.

The supply to the dryers, which operate as condensers, is so arranged that steam may be supplied from the main supply header or three dryers may draw the steam from the main drip header. The discharge of the traps draining these dryers goes to the pump header (E) which is drained by the vacuum pump and on which any desired vacuum may be maintained. The main drip header is drained by a large trap which discharges into the pump header.

In operation we will assume that three temperatures are desired on the machine, the high temperature being maintained by the use of live steam at say 5 lbs. pressure, and that exhaust steam at 2 lbs. pressure is being used in the center section of the dryers. As before stated, the traps draining all of the dryers, excepting those acting as condensers, discharge into the main drip header. The condenser dryers draw flash or vapor from the main drip header, this vapor being the result of water at 2 and 5 lbs. pressure being discharged by the traps draining the center and dry end section of dryers. In drawing steam from the main drip header the condenser dryers create a vacuum on the main drip header of, we will say, 4 inches. This is possible as we will maintain a vacuum on the pump header by means of the vacuum pump of from 6 to 8 inches or higher than the vacuum maintained on the main drip header. The condenser dryers which are creating a vacuum of 4 inch discharge into the pump header on which there is a higher vacuum.

It will be apparent then, that a vacuum is maintained on all drip headers into which the traps drain-



ing the paper machine dryers discharge. Because of this, it is possible to operate the machine at very low pressure, this, of course, depending on the drying capacity. With the arrangement of the supply piping to the dryers operating as condensers, it is possible to operate with one or two or all of them as condensers as may be desired. The installation of a reducing valve is suggested which will take steam from the main steam header and supply it to the main drip header, this valve to function when the vacuum in the main drip header runs above a predetermined point. In this manner it is possible to use three or more dryers as condensers and assure their operation at any desired temperature. By drawing vapor from the main drip header to the condenser dryers, we utilize the heat which otherwise must be reduced with cold water in order that the vacuum pump will function.

Where it is desired to carry two or three different temperatures on a machine, the advantages of this system are quite apparent. There are other advantages such as the utilization of all of the heat of the steam, eliminating the use of cooling water at the vacuum pump, the insurance of each dryer operating at maximum efficiency because of its being really handled as a separator unit and there is a simplicity of circulation which is not unlike that of an ordinary steam heating system where there is a trap on each individual radiator which has been one of the most successful systems.

There are other advantages. Providing the machine has sufficient drying capacity, it is possible to operate at a very low steam pressure because of the vacuum maintained on the drip and drain headers. This vacuum is not maintained by pumps, but by the condensing action of the wet end dryers which automatically reduce the temperature of these dryers lower than that carried on the balance of the machine, giving the desired advantage of starting the paper over cool dryers and bringing it up to drying temperature gradually. With this installation it is possible to make adjustments quickly and vary the temperatures as may be desired to suit the stock being dried, also adjustments can be quickly made to carry one temperature on the machine or different temperatures on the different sections. The complete system is so arranged that equally good results may be obtained when drying different grades of paper, in other words it will give high efficiency under variable conditions.

The Armstrong Trap, used to illustrate this application, is particularly suited to this service because the trap will not become air-bound, but instead will pass air on through to the discharge header without a waste of steam. It is also very efficient in the drainage of a paper machine dryer by syphon pipes as steam must continually flow to the trap in order that it remain closed, the moment water seals the syphon pipe preventing this flow of steam, the steam in the bucket of the trap will condense and the bucket will sink opening the valve, when the discharge takes place. By the use of a trap on each dryer any difficulties due to the short circuiting of the flow of steam through any section of the dryers are eliminated. Each dryer operates as an individual unit entirely independent of any other dryer in the machine.

The recent development of a thermic unit to be used in connection with traps of this type is another valuable improvement. This unit when applied for draining paper machine dryers holds the trap open so long as it is cold, but immediately releases the trap when it is up to operating temperature. By use of this unit the machine heats up very rapidly when the steam is first turned on, all of the traps blowing straight through and cold air and water are discharged without intereference. But when steam comes to the trap it immediately starts to function as a trap, preventing any discharge of steam, the same as though the trap were not equipped with a thermic unit.

CONTRIBUTION TO THE STUDY OF THE VISCOSITY OF LUBRICATING OILS

The conclusions arrived at by P. Nicolardot and Geo. Beaume, as the result of careful investigations, are as follows: —

1. Barbey's viscosimeter, which is the one in general use in France, yields very satisfactory results, especially at ordinary temperatures, except for very viscous oils, in which case the error may be as high as 8-10%, or for oils with very low viscosity when the temperature is sensibly different from that of the atmosphere.
   If F = the Barbey degrees of an oil, d = its density, and n = its absolute viscosity, then
   $$n = \frac{48.5d}{F}$$
2. Engler's viscosimeter, which is official in Germany, yields much less accurate results. The error may even be over 20%, and it can still be as great as 10%, even when applying Ubbelohde's correction according to the equation
   $$n = 0.Old\ (7.32E - 6.32/E)$$
   Where E = Engler degrees If E is very large (over 15) this expression practically becomes
   $$n = 0.0732dE$$
2. The relation between Barbey and Engler degrees is as follows:
   $$\frac{4.850}{F} = 7.32E - \frac{6.32}{E}$$
   or if E is large (over 15)
   $$\frac{663}{F} = E$$
4. The method recently brought forward by Dubrisay is unreliable on account of the error due to the surface tension and the density of the oil.
5. The "rise method" recently perfected by Baume and Masson is useful for measuring very high viscosities, especially at temperatures below 0°C.
6. The "ball method" has given satisfactory results with the apparatus devised by Aubert and de Laroche.
7. The very simple contrivance recently studied by Baume and Erckmann can render valuable services for liquids having very high viscosities.

The authors hope to undertake a similar study on the Redwood and Saybolt viscosimeters in the near future.
(Translated for Pulp & Paper by A. P. Couture from Chimie & Industrie, Vol. 1, No. 3, Aug. 1918.)

WHO WANTS 'EM?

You can buy parts after the accident, but—
The eyes won't see.
The fingers won't feel.
The legs won't run.
Be careful of those you have.

NEWSPAPER PUBLISHERS CONVENTION

The American Newspaper Publishers' Association and the Associated Press held their annual meetings at the Waldorf-Astoria Hotel last week. Distinguished guests, among them President Harding, Senator George W. Pepper, Senator W. E. Borah and Postmaster-General Harry S. New, addressed the gatherings.

The publishers' convention was opened by Paul Patterson, publisher of the Baltimore Sun, with an address as president of the association. Mr. Patterson reported that the publishers had met successfully a difficult newsprint situation last summer and that conditions are much improved. Last summer's shortage was caused, he said, by the greatly increased consumption of newsprint which entailed a sharp advance in prices. A campaign conducted by the association's conservation committee was effective in restricting the amount of newsprint used by publishers and resulted in a price decline to normal levels.

A resolution was adopted declaring as the sense of the membership that the term "standard newsprint paper" as placed upon the free list in the Federal tariff act of 1922 "can be defined as newsprint paper used in the manufacture of standard newspapers." The resolution directed the committee on Federal laws "to urge upon the Federal Treasury Department and collectors and appraisers at several ports the adoption of this definition in the interpretation of the tariff laws."

Alluding to the campaign of the committee on Federal laws against the imposition of a duty on sulphite pulp, Mr. Patterson asserted that able support was obtained from the sub-committees organized in each state, and the proposed tariff was prevented.

A particularly active year by the association's traffic committee was indicated in Mr. Patterson's report "Traffic conditions on the railroads," he said, "became acute in the fall. Many manufacturers were reporting shortage of cars. In certain sections embargoes on certain classes of freight were established. The traffic committee has dealt most effectively with both situations. It has kept in active touch with the various mills, and by keeping the railroads constantly and fully informed as to the pressing needs of adequate car supply has managed to relieve all pressing cases of car shortage. The traffic committee also was very active in relieving newsprint shipments from various embargoes and restrictions."

All of one session was devoted to a discussion of labor problems, with particular emphasis on the question to what extent the association should commit itself to the pecuniary maintenance of schools for the training of printers to counteract the admitted shortage in that craft. A resolution placed the convention on record as favoring the support and development of regional schools of this sort. The resolution provided that such schools be supported primarily by the newspapers "in such designated territories by plans of assessment to be devised by the newspapers within such regions."

The principle of the sympathetic strike in labor disputes, insofar as it affects relations between newspapers publishers and printing unions, was condemned and rejected in a resolution adopted at the closing session of the convention. The association re-affirmed its stand with regard to arbitration with the International Typographical Union, voting to refuse to renew arbitration contracts unless the union will agree to arbitrate all matters concerned in contracts with the publishers. This is the same position the publishers have taken for the last two years. The union has been willing to arbitrate questions of scale and wage conditions, but has refused to arbitrate questions affecting union rules as embodied in its international law.

The following officers were elected for the ensuing year: President, Paul Patterson, Baltimore *Sun*; Vice-President, S. E. Thomason, Chicago *Tribune*; Secretary, John Stewart Bryan, Richmond *News-Leader*; Treasurer, Howard Davis New York *Tribune*.

Frank B. Noyes of the Washington *Star* was chosen to the presidency of the Associated Press for another term.

Book Reviews

THE OUTLINE OF SCIENCE. A Plain Story Simply Told. Fourth Volume, Edited by Professor J. Arthur Thomson, Regins Professor of Natural History in the University of Aberdeen. Publishers, G. P. Putman's Sons, New York and London. Price, $3.75.

This work gives the intelligent student-citizen otherwise called "The man in the street" a bunch of intellectural keys by which to open doors which have been shut to him, partly because he got no glimpse of the treasures behind the doors, and partly because the portals were made forbidding by the unnecessary display of technicalities.

It is difficult to see what the expert can object to and yet the text is so simple and clear that the general reader, who has no time for special study, can understand it.

The name of the editor is a guarantee that the work is accurate and fascinating. The reader's sense of wonder is appealed to successfully on every page.

The hope is that the four volumes (containing 800 beautiful as well as useful illustrations and a large number of colored plates) will be given a place of honor and daily use in thousands of families and in all public libraries.

What splendid material, skilfully arranged for the growing minds. Here we have a bird's eye view of the whole amazing story of science and its accomplishments.

The final chapter, "Science And Modern Thought," by Professor Thomson, is a splendid, brilliant summing up and in the latter paragraphs he wisely points out that all the sciences, including mathematics, sprang from concrete experience of practical problems, and most theoretical investigations have made the biggest differences in man's every-day life of today. Wireless telegraphy, the telephone, aeroplanes, radium, antiseptics, antitoxins, spectrum analysis and X-rays were all discovered in the course of abstractly scientific researches. "If" he adds "the utilitarian criterion is pressed in a short-sighted way, that, as to results, defeats itself. The old discouragement expressed in the saying that increase of knowledge is increase of sorrow has been replaced by a more robust confidence in what science may achieve in the control of life. The modern outlook is expressed in Herbert Spencer's pithy sentence: 'Science is for Life not Life for Science', or in Comte's well known saying: 'Knowledge is Foresight and Foresight is Power'."

Order from Pulp & Paper Magazine, Gardenvale Que.

FISCAL YEAR ENDS WELL

Export of Pulp & Paper greatly increased

The regular report issued by the Canadian Pulp and Paper Association gives details of the exports of pulp and paper for the month of March. The total value of these exports last month amounted to $13,952,246 which was an increase of $3,968,568 or nearly 40 per cent over the previous month and also a considerable increase over the figures for March, 1922.

Details for March 1923 and 1922 are as follows:—

	MARCH, 1922		MARCH 1923	
	Cwts.	Value	Cwts.	Value
Paper				
Newsprint	1,903,913	$6,793,128	2,268,998	$8,609,766
Book Paper	86	1,114	5,826	37,767
Other Paper & Mfr.		663,656		896,486
		7,457,898		9,544,019
Pulp				
Sulphate	288,306	902,254	305,229	994,428
Sulphate bl.	196,846	920,790	344,818	1,522,479
Sulphite unbleached	299,767	828,453	442,309	1,168,226
Mechanical	390,506	562,937	410,682	723,094
	1,175,425	$3,214,434	1,503,038,	$4,408,227

Newsprint exports in March broke all previous records when they reached 113,450 tons, crossing over the 100,000 tons line for the first time; the previous high figure having been reached in March 1922 with 95,196 tons. Exports of chemical pulp also made a new high figure with 54,618 tons exported compared with a previous high record of 53,670 tons in June 1920. The total value of the exports of pulp and paper was the highest recorded since December 1920.

The distribution of the March exports was as under:—

	Paper	Pulp	Total
U. S. A.	$8,720,924	$4,175,288	$12,896,212
United Kingdom	202,803	55,505	258,308
All other	620,292	117,434	797,726
	9,544,019	4,408,227	13,952,246

Our exports of pulpwood amounted to 113,493 cords valued at $983,436.

The Canadian fiscal year ends on March 31st, and we can therefore make a comparison between the year just closed and the previous year 1921-22. Considerable increases in exports were shown, both in values and quantities, over the preceding year, demonstrating the good recovery made by the pulp and paper industry during 1922.

Details are given in the following tables:—

Paper

	Fiscal year 1922		Fiscal year 1923	
	Cwts.	Value	Cwts.	Value
Newsprint	15,138,327	$64,635,627	20,130,455	$72,667,826
Book-paper	17,362	201,764	43,626	298,596
Other paper & Mfrs. ...		4,696,027		6,601,519

Pulp

Sulphate	2,377,556	$ 7,906,872	2,961,275	$ 9,262,393
Sulphite bld.	1,859,501	8,325,617	3,182,625	13,073,289
Sulphite unbl.	2,861,470	9,236,296	4,459,028	11,098,374
Mechanical	5,336,710	10,456,092	6,385,895	9,552,892
	12,435,237	$35,924,877	16,988,823	$42,986,948
Total pulp & paper	$105,458,295		$12,554,889	

Thus in the fiscal year just closed our exports of newsprint increased by 33 per cent over the previous year and reached over 1 million tons, exports of book paper were more than two-and-a-half times greater, exports of sulphate pulp increased by 24 per cent, exports of sulphite pulp increased by 61 per cent, and mechanical pulp by nearly 20 per cent.

Pulpwood exports for the fiscal year were also considerably above those for the previous year being 1,096,462 cords, valued at $10,755,655 compared with 825,967 cords valued at $9,879,150 for the year 1921-22.

EQUIPMENT ABSORPTION STATISTICS TO BE GATHERED

Chemical Equipment Association Institutes Long-needed Monthly Survey of Employment of Chemical Equipment and Materials, by Industries and Sections.

Statistics, the need of which not only the chemical industry but general industry throughout the country has long felt, are now being gathered through the co-operative efforts of members of the Chemical Equipment Association.

The membership of the Chemical Equipment Association, manufacturing the entire range of chemical equipment and materials employed internationally in such great industries as the manufacture of heavy and fine chemicals, of coal products, fertilizers, dyes, electro-chemical and electro-metallurgical products, the ferrous and non-ferrous metallurgical fields, the petroleum, ceramics, paper, rubber, paint, leather, lime, soap, and sugar fields, in the manufacture of edible and essential oils, in the great range food and animal products activity and in still other of the world's key industries, are in a uniquely strategic relationship to general business.

Equipment a Barometer

According to a statement made by Pierce D. Schenck, president of the Association, following a recent consideration of statistical activities by the board of directors: "Chemical equipment is in effect a barometric register of general industrials conditions both at home and abroad. In many ways, the absorption of chemical equipment and materials is as reliable and specialized an index to general industrials conditions as the production of pig iron was considered to be before the war, or as the Federal Reserve Bank's discount rates are now regarded."

FIRE LOSSES

In Canada are estimated for the week ending February 28th, 1923 at $2,251,200, $1,391,200 more than for the same week in 1922. This is appalling and should be a constant reminder to us to take no chances with fire hazards.

THE WOODLANDS SECTION

FOREST PROTECTION

(Editorial in, "THE GAZETTE," Montreal, April 18th, 1923.)

Canadian forests will this year be visited by a large number of delegates from all parts of the British Empire, embracing in their number well-known timber men of knowledge and experience who have been associated with the administration and management of the forests of the various parts of the Mother Country and the Dominions. Mr. Frank J. D. Barnjum, the Maritime Provinces lumber man and forestry conservation philanthropist, who has for many years conducted vigorous patriotic campaigns in the interests of the preservation of Canadian forests and who has spent time and money liberally in the pursuit of his schemes, is again to the fore in a project to stir up action in parliament, feeling, as he himself puts it, that forestry conservation "is one of the most vital problems facing this country today." Mr. Barnjum has offered thousands of dollars—not once, but several times—in prizes for suggestions as to how best to conserve the forests; preserve the trees from the ravages of the budworm and other harmful insects; and also prohibit the export of unmanufactured wood. Mr. Barnjum has recently addressed a personal letter to the Federal and provincial members of parliament, emphasizing the obvious necessity for immediate action, more particularly in the latter aspect of the problem.

Sir Lomer Gouin imposed salutary restrictions in the Province of Quebec covering practically 85% of the timber lands of the province which constitute the foundation of our pulp and paper industry, although there is no valid reason why the remaining 15% should not be equally well protected. Every new paper machine installed in Canada and every new issue of pulp and paper securities brought out and sold to the people of the Dominion are added arguments, it is urged, for prohibiting the export of raw wood. Close observers of the Canadian forestry protection problem are agreed that only have we not a sufficient supply of wood for the mills at present operating, but we are also suffering positive and serious ills because we have already denuded our forest areas to too great an extent. Emergency measures, to be followed by reduction of the "cut" on all lands, both public and private, are forcibly stressed—to the amount of the annual growth. China, at one time rich in wooded lands, was overtaken by disaster through what is precisely occuring in this country today, and unless strong measures are taken—and that speedily—to conserve the timber crops of this Dominion, Canada will find herself similarly placed. In her forests Canada has a tremendous natural asset and one which, in spite of all the depredations of past years can, by taking proper steps, be yet saved. God alone can make a tree. The virgin forests of the United States once covered well towards a billion acres—822,000,000 acres—over a million square miles, a tract, if all the trees were put together, 500 miles by 2,000 miles. There remain 137,000,000 acres, just one-sixth of the original acreage. Towns and farms have filled nearly half of the cleared spaces—359,000,000 acres—and second growth, much of it of an inferior quality, covers nearly a third—245,000,000 acres. The rest —81,000,000 acres—is idle land, devastated and growing nothing worth while.

The Supreme Maker of trees can do something, but He needs man's assistance; He can give the increase provided Pauls plant and Apolloses water and entomologists protect against pests, and fire wardens protect against fire, with the plant pathologists, and soil physicists. There must be systematic planting of trees, the great advantage of which was fully demonstrated in Scotland during the late war, when thousands of acres of magnificient Scots' pines were available for the construction of railway ties and other necessary work in France and Belgium. This area had been denuded of trees to furnish material during Napoleonic wars. It was replanted, and the result was the forest of Glenmore sprang up again as vigorous as ever and supplied the trees for use against the Germans. Farmers might well put all their uncultivated land into timber cultivation and conserve their bush acres by removing dead and fallen trees, and otherwise put to practical use the knowledge of forestry they have acquired. More and more should Canadians adopt all available measures for forest protection, insect and disease control, and by cutting timber in such a way as to provide for renewed growth. Until the practice becomes general and Canadians are as careful to avoid injuries to a forest crop as they would be to a wheatfield—and have the reverence for a tree the poets sing about, we shall always be up against the "forest and timber conservation problem." Members of parliament should try to recognize that this forestry problem is an agricultural problem. Timber is a crop. Mr. Barnjum's letter is concise and is worthy of careful and serious perusal by our legislators, who would do well to heed its suggestions, the adoption of which might go a long way towards increasing the wealth of the timber crop. The older wooded countries regulate the tree resources and see to it that their capital stock remains intact by cutting only the annual increment. If Canadians use up their wooded capital, the only alternative must be a forestial bankruptcy.

BUY BIG TIMBERLAND TRACT

The Eastern Pulpwood Company has acquired from the James Murchie Land Company, a tract of 57,000 acres of land on the St. Croix River. This is declared to be the largest timberland sale made by the Maine owners in several years. These lands, most of which are in Washington county, have been cut during recent years by the Eastern Pulpwood Company and the St. Croix Paper Company on stumpage rights. The Eastern Pulpwood Company has also made arrangements to purchase the Murchie interests the land in Calais between the Ferry Point bridge and the railroad bridge and will occupy the Murchie office building.

MARITIME FORESTS ARE NOW DEPLETED

The annual report of the Department of Crown Lands of Nova Scotia was recently submitted to the legislature. The net surplus for the last fiscal year was $33,453.45. Against the total receipts of $41,341.21 is charged $7,887.76 for salaries, surveys, refunds and other expenses.

In a recent editorial a Halifax paper says that there is apparently little to do now except express regret that provincial administrations during the last fifty years have practically wiped out the timber estate of the province as an asset of value and a revenue producer. If the interests of the people had been served, it adds, the timber areas would now be competing with the coal areas of Nova Scotia for first place as a provider of revenue. Notwithstanding the teaching of history, the warnings of far-sighted men and the suggestions which must have at times appealed to the successive governments of the province, improvident methods prevailed and bit by bit the asset of the people was given away until there is practically nothing remaining. The climax of the whole matter was reached last year when an announcement was made that the remaining Crown Lands were withdrawn for either lease or sale. It seems, however, that what Crown Lands remain are of no use either for settlement or lumbering.

The paper concludes,—"This is a lamentable story of the dissapation of one of the splendid heritages of the people of Nova Scotia, and nothing is being done to replace it."

UNITED STATES FORESTRY NOTES

According to the representatives of one of Maine's large paper manufacturing companies, there are now more native Maine men in the lumber camps of that State than has been the case at any previous time in the last ten years. Better pay and shorter hours in other callings drew many Maine men away from the woods a President, S. E. Thomason, Chicago Tribune; Secretary. few years ago. Their places were taken by immigrants from northern Europe,-- Russians, Finns, Swedes and Norwegians for the most part. Now these foreigners are leaving. There has been a steady exudus of them for several years, and at present the woods are pretty well stripped of them.

Under a co-operative plan, the campaign for the extermination of the gypsy moth as a menace to fruit, shade and forest trees of New York State will soon be launched by that State's Conservation Commission with the assistance of the United States Department of Agriculture.

"We plan to work ahead of the moth," said Commissioner MacDonald, "and prevent its advance until it can be exterminated with the assistance of the parasites that prey upon it.

President Harding's proclamation for a week of forest protection preaching and practical work is meeting with a favorable reaction. Representative Martin L. Davey of Ohio has a program of legislation of "practical value" in this campaign. In a letter to Senator McNary, chairman of the Senate committee on reforestation, he suggests that the Government buy up vast tracts of cheap waste land now available and embark upon a "wholesale program of reforestation." He further suggests that taxes be eliminated from growing timber lands as far as possible and that the land about headwaters of all important streams be reforested without regard to its value for other purposes. All lumbering from now on should be placed under the control of the United States Forest Service, Mr. Davey urges. "There should be levied by the Federal Government a tax of some reasonable amount to every thousand feet of lumber cut from now on. Every dollar of this money should be turned into reforestation and measures of conservation. The Federal Government should eliminate all taxes from growing timber lands; and it should urge every State to lift the taxes from such lands."

During the last four years the Army Air Service has maintained an extensive and successful fire patrol over the heavily timbered regions of California and Oregon, says the United States Army *Recruiting News*. A total of 458 fires was discovered, of which number it is estimated that approximately 114 were first discovered by airplanes. The fires were located with an average accuracy of 95 per cent. There was an average of nine officers and twenty-eight enlisted men on duty and ten airplanes in commission. The total area observed was about 2,153,370 square miles; the total number of miles flown 36,121 and actual flying time 36 hours. It is roughly estimated that the value of the timber in this area amounts to one-half billion dollars. Lack of funds has caused the army to withdraw its planes from the fire patrol system, which it is estimated has saved many millions of dollars.

WATERPROOFED BOARD

Owing to the increase in cost and lower quality of lumber now obtainable, there is a strong incentive to use the inferior woods and waste papers to make products that will replace the ordinary wooden products with which we are familiar. For example, pasted paper products are used extensively as boxes to replace the ordinary wooden box. Paper barrels are now made, by special machinery, by winding up and pasting a roll of paper into suitable cylindrical shapes and attaching heads to them. Paper pails are made by pressing wet pulp into a solid pail, or by winding the paper into a pail while pasting it together. Pulp products are now made, in the shape of a board, which are fairly water resistant and very light in weight, and these are very useful.

Because of the improvements in methods of waterproofing paper, by treating it before it is formed on the machine, and also the development of special organic products for pasting it together, which will become insoluble on drying, it may be said that the problem of making a thoroughly waterproof board has already been solved and merely awaits the application of these processes which are now perfected. With regard to the properties of this new board product, it should be possible to make it sufficiently waterproof so that it will not absorb 20 per cent. of moisture after several hours' immersion in water.

—The Paper Container.

The Crane paper mills at Dalton, Mass. are now under direction of Winthrop Murray Crane, son of the late Senator Crane. Mr. Crane is 43 years old. He was educated at Yale University. After graduation from that institution, he donned overalls and went to work in a paper mill for $15 a week. Frederick Goodrich Crane, Jr., a cousin, will be associated with Mr. Crane in the management of the Dalton mills.

Mr. Barnjum says: — Sweden, Norway and Finland, outside of the United States, are Canada's chief competitors for the world's trade in pulp and paper. None of these countries permits the exportation of raw pulpwood. Why should Canada?

INSTITUTE ITEMS

WHAT THEY SAY OF OUR SCHOOL

(From THE STANDARD, Watertown, N. Y.)

One of the most interesting examples of industrial education is now being carried on by the pulp and paper industry of this continent.

For a number of years about 100 of the best technologists of this industry have been engaged in the preparation of a set of authoritative text and reference books, to cover every phase of pulp and paper making especially fitted for correspondence study.

T. Linsey Crossley, who is a member of the Joint Executive committee on vocational education of the pulp and paper industry in the United States and Canada is now visiting the mills in this part of the state in order to introduce the courses based on the text books of the committee. He will also take applications for scholarships in the institute of Industrial Arts which is the organized school authorized by the industry, functioning now for some months. He has already an enrollment of over 250 students holding positions from manager down to laborer.

The course of study covers all the essential mathematical and science subjects, beginning with elementary arithmetic, and proceeding through every phase of manufacture.

The teaching staff of this school of industry is unique in that it consists of men holding important positions in mills throughout the continent who by the consent of their employers undertake to act as instructors in the particular department in which they have had special experience.

This arrangement and the fact that the industry in the United States and Canada has invested $50,000 in the preparation of the five volumes of reference textbooks, makes it possible to carry on an exceptionally high grade school with very low priced courses.

It is believed that in this manner the pulp and paper industry offers unusual opportunities for ambitious young men and also that the co-operation necessary for more economic production as between, administrative, technical and operating staffs, will in this manner be brought about.



1, 3, 4, 5, 6, 7, 8, 9, 10, 11

The Plant and Picturesque Surroundings of Pacific Mills, Ltd., Ocean Falls, B. C., where the Institute has a large number of students. This picture was taken from a nearby mountain, and shows: 1, Japanese town, 2. Club and tennis courts, 3. Steamship landing, 4. Hotel, 5. General store, 6. Paper mills and freight wharf, 7. Amusement ball (above), 8. Pulp mills, 9. Dam (above), 10. Steam plant, 11. Saw mills.

SAVING OF WASTE IN PAPER MILLS

That waste in the paper industry can be avoided with an actual profit to the mill was indicated by the report of the Committee on Waste to the Technical Association of the Pulp and Paper Industry today, particularly in the case of thousands of gallons of what is known to the paper men as white water.

This white water, containing infinitely small bits of pulp can be saved by using this water over again in the mill processes. It requires 7,000 gallons of water to make every 100 pounds of paper, and one important recommendation for the saving of waste is the reusing of the water which has gone through the machines. The committee on waste declares that in most cases the reuse of white water saves power, with little or no increase of equipment, and at the same time a material carried in the white water.

The use of screens and sedimentation tanks separately or in combination, is advocated, and the committee urges that definite tests be made to determine the amount of material carried in the waste water, as a means of finding the extent of the saving that may be effected. Some estimates are that 10 per cent of raw material can be saved by adequate equipment, but this is probably in excess of the facts.

Technical Section

REVIEW OF RECENT LITERATURE

A.—Properties and Analysis of Raw Material and Products

A—1. The Quantitative Composition of Coniferous Woods. Astrid Cleve v. Euler. **Cellulosechemie,** 4, 1-11 (Feb. 11, 1923.) As a result of several investigations it has been established that the lignin content of woods is not constant but varies within rather wide limits. The controlling factors are the age of the tree, the climate and conditions of growth, and the section of the tree tested. As an aid in determining the true lignin value the following definition is offered. Wood proper, chemically considered, consists of the carbohydrates of the cell walls, insoluble incrustations or lignin substances of a tannin nature which are mixed with the carbohydrates, soluble tannin substances related to lignin, and dyes or their leuco compounds which appear in the cell wall and bear a certain relationship to lignin. The mineral constituents (represented by the ash), wood protein, fat and turpentine are not included as a part of wood proper. Evidence is given for alcohol-soluble lignin and considerable space is devoted to the nature of the rosin extract. The best procedure to follow in the extraction of coniferous wood is first a 10 hour extraction with benzol, followed by 30 hr. with 96 per cent. alcohol at boiling temperature in a Soxhlet or similar apparatus. Separate extractions are better than a benzol-alcohol mixture. Averages of 9 tests on Swedish coniferous woods gave 4.15 per cent benzol-rosin and 3.63 per cent alcohol (lignin)-rosin. To obtain true lignin values from empirical ones, as given by the Willstatter-Zechmeister 41 per cent hydrochloric acid method or the Klason-Becker 72 per cent sulphuric acid method, the following corrections should be applied: (1) the residue obtained by weighing calculated in per cent of the dry wood should be increased 2 units to compensate for loss of acetyl; (2) if the sulphuric acid method was used the resulting value should be decreased by 5.7 units which corresponds to 4.0 per cent sulphur taken up from the acid; (3) the so-corrected value should be adjusted to ash- and protein-free wood (ash and protein amount to about 1 per cent), also to rosin-free wood as given by the benzol extraction and finally to wood dried to 102 deg. C.; (4) to the previously corrected lignin value the amount of lignin-rosin extracted with alcohol (after a previous extraction with benzol), based on fat,-protein-and ash-free wood, should be added. This figure, then, represents the true lignin value for pure, dry wood. The following corrected true values are given (average of 9 analyses of spruce and pine) for Swedish woods: total lignin 28.4 per cent, carbohydrates 71.6 per cent. Data are given comparing the results of Klason and of Oman with those of the author. — J. L. P.

A-4. The Reddening of Sulphite Pulp. H. E. Wahlberg. **Svensk Pappers-Tid.** Translation in **Paper Trade J.** 76, No. 6, 53 (Feb. 8, 1923). The reddening of sulphite pulp is caused by the oxidation of impurities in the pulp, such as ferrous salts and organic substances which give red ferric compounds. The reaction takes place especially in a moist atmosphere or in the presence of oxidizing agents, such as bleach liquor, and is accelerated by small quantities of copper salts in the pulp. The color can be avoided by the use of a cooking acid as free as possible from iron salts. The red color can be removed by washing the pulp with water acidulated with sulphurous acid.—A. P.-C.

A-4. The Composition of Chemical Pulps of Various Origins. Julien, Becker & Co. **Papeterie,** 45,117 (Feb. 10, 1923). Analyses are given of (1) bleached Austrian sulphite, (2) No. 1 strong German sulphite, (3) No. 2 strong German sulphite, (3) No. 2 strong German sulphite, (4) "St. Lawrence" Canadian easy-bleaching sulphite, (5) "St. Lawrence" Canadian hard sulphite, (6) Canadian "Ha Ha Bay" sulphite, (7) unbleached Scandinavian sulphite, (8) unbleached Scandinavian soda pulp.

Pulp	Baryta Number	Alpha-cellulose per cent	per cent Resins	Lignin per cent	Cl consumption No.	Ash per cent
1	1.5	....	0.288	84.54	82.91	.....
2	55.5	5.52	0.506	87.83	84.86	0.730
3	62.5	5.79	.....	87.43	85.76	0.712
4	24.2	4.37	0.658	86.88	84.92	0.518
5	75.5	....	.....	.....	.....	0.606
6	51.0	....	.....	.....	.....	0.480
7	47.0	....	0.882	.....	.....	0.867
8	....	4.85	0.102	90.03	96.33	0.732

All determinations were carried out on bone-dry pulp, with the exception of ash, which was determined on air-dry pulp. Lignin was determined by Becker's 72 per cent sulphuric acid method, resin (including fats and waxes) by extraction with ether, alpha-cellulose by means of 17.5 per cent caustic soda solution, baryta number by the Schwalbe-Sieber method, and chlorine consumption by a modification of Sieber's method (details not given). — A. P.-C.

A-15. High Spots in the Chemistry of Cellulose. Gustavus J. Esselen, Jr. **Ind. Eng. Chem.,** 15, 306-308 (March 1923). Brief notes on a few of the more interesting of the recent developments in cellulose chemistry. — A. P.-C.

D—Groundwood Manufacturing and Equipment

D-4. The Breaking of Wood Grinding Stones. Paper Ind. 4, 1659-1660 (March 1923). An outline of the various causes of breaking of grinder stones, more particularly at the corners, and of the methods of avoiding these breaks. A. P.-C.

D-4. Grinding Stone for Wood Grinder. Gottlieb Hohmann. Ger. patent 358,568. **Wochbl. Papierfabr.** 54, 171 (Jan. 20, 1923).—J. L. P.

D-0. Seventy-Five Years of the Wood Pulp Industry. L. Moser, **Wochbl. Papierfabr.** 54, 101-103 (Jan. 13, 1923). A brief account of the development of the mechanical wood pulp industry in Germany.—J. L. P.

E—Sulphite Process and Equipment

E-2. Process for the Recovery of Sulphur from Waste Sulphite Liquor. Anton D. Seppe and Otto Zeitschel. Ger. patent 366,714. **Papierfabr.** 21, 68 (Feb. 4, 1923). The evaporated dry waste liquor is treated with dry

hydroxides, oxides or carbonates of the alkali elements and a small quantity of water and then heated to 150-300 deg. C. The lignin is subsequently precipitated with an acid.—J. L. P.

E-5. Chemistry of the Sulphite Process, II. Chemical Properties of Pulps Prepared by Indirect Cooking. Mark W. Bray and T. M. Andrews, Forest Products Laboratory, Madison, Wis. **Paper Trade J.** 76, No. 3, 49-52 (Jan. 18, 1923). With all conditions constant except time, a series of spruce pulps was prepared by indirect cooking (for conditions of cooking see **Paper Trade J.** 20, 591, 1922). These pulps were compared with commercial pulps made under similar conditions. It has been found possible to compare such pulps by taking into consideration the cellulose content. A high cellulose content appears necessary to produce good pulp. The percentages of stable and unstable celluloses are an indication of the quality of the pulp, the pulp with the greater amount of stable cellulose usually being of superior quality. The pulp deteriorates with the overcooking necessary to remove all the lignin.Until the ninth hour of cooking the cellulose and lignin contents of the pulp are very nearly the same as those of the wood. The first few hours do not affect the alkali-soluble material. In the latter part of the cook a larger amount of this material is removed. While the character of the cellulose and lignin content is indicative of the quality of the pulp produced, other factors not well understood appear to exert considerable influence. Cellulose is always lost during the removal of lignin, and it seems 45 per cent. is about the maximum yield of cellulose by present commercial methods of sulphite cooking. — A. P.-C.

E-5. Chemistry of the Sulphite Process, III. Reactions of the Calcium Base. R. N. Miller and W. H. Swanson, Forest Products Laboratory, Madison, Wis. **Paper Trade J.** 76, No. 9, 49-51 (March 1, 1923). A report of an investigation into the disappearance of calcium during sulphite cooking, with observations on the effect of variable conditions on the pulp produced. The decrease at the end of the cook amounts to as much as 50 per cent. (and over) of the total amount of base originally present in the liquor, the decrease depending on cooking conditions. Both the rate of disappearance of the base and the rate of exhaustion of the bisulphite is greater in the case of the drier wood; but the rate of combination of the base with the organic matter of the wood does not show great variations. The base missing from the liquor is localized around the fibers in some way, at least partially in the form of calcium monosulphite. The greater the moisture content of the wood, the less the amount of lime localized on the fibers. With slow temperature rises the disappearance of lime is greatly reduced. The rate of disappearance does not depend on the acid strength. All other conditions being equal, the wood of high moisture content will give a larger yield of better pulp.—A. P.-C.

E-5. Chemistry of the Sulphite Process, IV. Distribution of Sulphur During Cooking. R. N. Miller and W. H. Swanson, Forest Products Laboratory, Madison, Wis. **Paper Trade J.** 76, No. 10, 51-54 (March 8, 1923). A series of semi-commercial indirect cooks were made, and the following determinations were made on samples of liquor from the digester: total sulphur dioxide by a method developed by the authors (run 2 cc. of liquor into 1 cc. of 15 per cent. caustic soda solution, half fill the crucible with sulphur-free Eschka mixture, dry at 100 deg. C., heat while passing a stream of oxygen through, absorb the gases in 5 cc. of 15 per cent. caustic soda solution, and then proceed as in the determination of sulphur in coal by the Eschka method), total inorganic sulphur dioxide by iodine titration, combined sulphur dioxide by Sander's method, loosely combined sulphur dioxide by Klason's method, and sulphate by Sherrard and Blanco's method. Total sulphur dioxide are in combination as calcium bisulphite the sulphur dioxide; but if it is assumed that the missing base (see preceding abstract) and the missing sulphur dioxide are in combination as calcium bisulhpite, and the sulphur dioxide equivalent to the missing base calculated and added to the sulphur dioxide found, the total sulphur dioxide thus found at the end of the cooks is practically equivalent to the total sulphur dioxide introduced into the digester. The results clearly show that the digester contents during the cook are not homogeneous, that there is a concentration of chemical in chips. Loosely combined sulphur dioxide contributes little to the kuowledge of the reactions going on in the digester. No appreciable quantity of sulphate is formed until near the end of the cook; the formation of sulphate does not appear to be governed by the temperature but rather by the concentration of free sulphur dioxide. A study of the results seems to show that the reactions taking place in the digester are subject to numerous variations and any attempt to set down a quantity as the correct value for sulphur consumption per ton of pulp is fruitless. Cooks made with kiln dried wood showed lower lignin removal per pound of organically combined sulphur. The reactions involving the combination of the base and sulphur with organic matter seem more or less independent of the reactions which govern the quality of the pulp.—A. P.-C.

E-5. Preliminary Treatment of Cellulosic Raw Material for the Production of Cellulose. Erik L. Rinman. Ger. patent 366,701. **Papierfabr.** 21, 58 (Jan. 28, 1923). The raw material, before treatment with cooking liquor, is soaked in warm water or warm dilute waste liquor at 80 deg. to 90 deg. C. The liquid is removed before the cooking liquid is added; an increased yield is claimed.—J. L. P.

E-5. Process for Filling Digesters with Warm Sulphite Cooking Acid. Zellstoffabrik Waldhof and Hans Clemm, Ger. patent 363,999. **Wochbl. Papierfabr.** 54, 396 (Feb. 10, 1923).—J. L. P.

E.-0, F.-0. Removal of Resin, Fat, Wax, etc., from Plant Materials, Especially Wood and Wood Pulps. C. G. Schwalbe. Ger. patent 366,205. **Papierfabr.** 21, 28-29 (Jan. 14, 1923). The process consists in subjecting not only the extraction liquid but also the materials to be extracted to a continuous or intermittent motion, accomplished by rollers or similar devices which also expose fresh surfaces of the material to the solvent.—J. L. P.

E-0, F-0. Process of Making Pulp. F. K. Fish, Jr. Can. patent 225,538, Oct. 31, 1922. The chips are first steamed in an atmosphere containing more or less of the volatile extractive matter from the wood then treated with a superheated solution (at about 245 deg. F.) of the water soluble extractive matter of the wood. The pressure is relieved as rapidly as possible, the material is subjected to a vacuum, and it is than subjected to a mild treatment with a suitable chemical solution for a short time and then washed, first with hot water under pressure. The liquor used for the chemical treatment can be used repeatedly.—A. P.-C.

UNITED STATES NOTES

A demand for a 10 per cent. increase in wages and the elimination of Saturday night and Sunday work together with a guarantee of four days' work a week for skilled help during slack periods will be presented to the manufacturers by the Eagle Lodge of Papermakers of Holyoke, Mass., at a conference to be held at an early date. The outcome of this conference will be watched closely by other unions as it is figured that if the skilled help get their advance, increases will be asked for by the steam engineers, millwrights and other trades connected with the industry.

Leading paper companies of Kalamazoo have voluntarily raised the pay of their employes. Wages of male employes were increased 5 cents an hour as those of women workers 3 cents an hour. This advance, which was made effective as soon as announced, aggregates over $10,000 each week or between $525, and $550,000 a year.

S. L. Wilson, acting president of the American Writing Paper Company, has been elected president to succeed George H. Galliver, resigned. Dr. Ralph E. Rindfuzz, secretary and director of the corporation, and R. R. Campbell, vice-president and production manager, have tendered their resignations to Mr. Wilson. Mr. Campbell has been with the American Writing Paper Company since 1918. He has not announced his plan for the future.

On the recommendation of Secretary of Commerce Hoover, Georges K. Burgess has been appointed Director of the United States Bureau of Standards. Mr. Burgess has been Chief Physicist of the bureau. He succeeds Dr. S. W. Stratton, who resigned several months ago to become President of the Massachusetts Institute of Technology.

Sustaining a protest of G. W. McNear, Inc., of San Francisco, the General Customs Appraisers find that imported strawboard, made principally or wholly from straw, assessed at 25 per cent ad valorem, as "writing paper," under the Tariff Act of 1913, should have been assessed at but 5 per cent.

Articles of incorporation have been filed with the Secretary of State, Michigan by Irving Hopper, his wife Elnora Lee Hopper, and R. C. Goemble, attorney, as incorporators of the El-Nora Lee Paper Company of Kalamazoo. The new enterprise is capitalized at $600,000. Kraft and book papers will be the principal product. Mr. Hopper was formerly general superintendent of the Kalamazoo Stationary Company. The Hopper property at Howlandsburg, about three miles north of Galesburg, is to be the site of the company's plant.

A new collar for paper machines, the invention of George F. Lentz, an employe, has been put in use by the Hoberg Paper Company, Green Bay Wisconsin. The new collar is an improvement over the old set screw type and can be used on any type of paper machine. It does not mar or scratch the shaft and is easily adjustable.

Information obtained through the paper questionnaire sent to all parts of the world by the Paper Division of the Department of Commerce is being tabulated by John Matthews, jr., chief of the division, and will be made available at an early date. The response to the questionnaire has been most encouraging thus far, according to Mr. Matthews, and it is expected much important data will yet be received.

George L. Henderson has resigned as secretary and treasurer of the Pejepscot Paper Company.

A contribution of $25,000 toward a $350,000 fund to erect a new Y. M. C. A. building in Green Bay, Wis., has been made by Judson G. Rosebush, of the Patton Paper Company and the Northern Paper Mills, Green Bay. The donation by Mr. Rosebush was one of the largest in the drive for funds. He is International President of the Y. M. C. A. Eight or nine years ago he was one of the largest contributors toward the Appleton Y. M. C. A. Building.

G. C. Kennedy, until recently with the Allied Paper Mills sales department in New York, has opened offices at 84 Water Street, that city, where he will represent the Paper Products Company of Swarthmore, Pa. the Erving Paper Mills of Erving, Mass., and the Crescent Paper & Machine Company of Phoenix, N. Y. He will deal in filter papers made in Japan and other specialties.

The Toledo Stationary Manufacturing Company has been acquired by the Kalamazoo Stationary Company, which has made arrangements to handle the Toledo concern's business from its head offices in Kalamazoo.

J. E. Mitchell, J. P. Liddy and A. J. Foley, all of Utica, N. Y., have incorporated the American Toilet Paper Company, with a capital stock of $25,000.

BUD WORM KILLS MORE WOOD THAN IS CUT

That the spruce bud worm is doing more damage to the pulp wood forests of North America than all the cutting by the paper companies was pointed out by C. W. Boyce of the United States Forest Service during the convention of the Woodlands Section of the American Paper an Pulp Association. Quoting Chief Forester Piché of the Province of Quebec as authority for the estimate of the loss of 75,000,000 cords of pulp wood in the last ten years, he said this comes within 50% of the entire amount of wood used by the paper industry of North America since its beginning. It was also pointed out that the heaviest portion of this damage was in the three years ending in 1920. At a minimum estimate of $15 per cord, the financial loss due to this insect would total over a billion dollars. The losses in other portions of the northeastern states and provinces add hundreds of millions of dollars of losses to this huge figure.

PAPER EXPORTS DURING 1922 SHOW

Final figures of United States exports of paper mill products for 1922, amounting to $24,152,567, show a decline in value of $4,877,106, as compared with the 1921 total of $29,029,673, according to a recent report issued by the United States Department of Commerce.

The North Western Railway of India has laid 50 miles of track with a new iron and concrete sleeper, the "Stent sleeper", which is fitted with plugs of creosoted wood to which the rails are attached.

PULP AND PAPER NEWS

Mr. H. D. Huff of the Riordon Company and Mr. G. Ruickbiée, manager of the transportation department of the Canadian Pulp and Paper Association attended a convention of the Manufacturers of Three Rivers, Shawinigan Falls and the St. Maurice River Valley held last week at Three Rivers.

April 17th marked the 43rd year of Mr. T. J. Stevenson's connection with the Riordon Company. He commenced this with the Merritton Paper Company, founded by the late John Riordon, which manufactured in those days 8 tons of newsprint and wrapping paper per day, using rags and groundwood. Contrast this with the output of any of our modern mills. Mr. Stevenson has naturally participated in the evolution of Canada's pulp and paper industry, and has witnessed eras of depression and of prosperity. He is by nature an optimist, and looks forward to still greater expansion of the industry.

Mr. W. J. Egan, Canadian Trade Commissioner to South Africa, will be at the offices of the Canadian Pulp and Paper Association at 10 o'clock on the morning of Wednesday May 9, and will be glad to meet any members of the Association who may be interested in extending the pulp and paper trade with South Africa.

A large party of timber cruisers have been at work in the Gatineau district in connection, it is stated, with a pulp and paper scheme, which according to report will be of an extensive character. English capital will be interested.

In connection with the sale by auction of the Quinze River water powers, it may be pointed out that Mr. Alex Fasken of Toronto, who was the successful bidder, is president of the Temiskaming Pulp and Paper Company, Limited, with a groundwood mill at Haileybury, Ont. The capacity is 40 tons per 24 hours.

We understand that Mr. S. A. Ginger, who resigned from the Howard Smith Paper Mills, Limited, Montreal and left for England on April 20, has joined the staff of Becker and Company, Limited, London, England.

Two or three British and American mill supply firms have under consideration the construction of branch factories at Three Rivers, P. Q.

When seen at the head office in Toronto of the Provincial Paper Mills, Limited, S. F. Duncan, Secretary-Treasurer of the company, characterized as rather premature the announcement that the company would build a one million dollar soda mill at Port Arthur in 1924 for the purpose of making woodpulp out of poplar. He admitted, however, that the project was part of the general program of expansion, although as to when it would be put into effect would altogether depend upon what measure of success attended the enterprise recently inaugurated at Port Arthur.

A good sized delegation from the Toronto wholesale and manufacturing stationers is expected to attend the annual convention of the Canadian Booksellers and Stationers' Association which will take place at the Prince George Hotel in Windsor on May 17 and 18.

An office will shortly be opened in North Bay by the forestry branch of the Lands and Forests Department of the Ontario Government with a view to giving better fire protection to the districts which North Bay serves, as well as in assisting general forestry work. The office will be in charge of J. F. Turnbull, B. S. C. F., formerly of Tweed, who has arrived in the town to take over his new duties. The North Bay district will be known as forestry district number 4, and will extend from Mattawa, the boundary of the Pembroke district, to Markstay, where it comes in contact with the Sudbury district. Northwards it will extend to mileage 50 on the T. & N. O. Hitherto the district has been looked after by the Sudbury office.

Rapid progress is being made at Thorold in connecting up the town power and water supply with the Montrose Division of the Provincial Paper Mills, Limited. The work involves the building of a couple of iron bridges for the use and convenience of the mill employees and the improvements include provision for a steady supply of pure water for manufacturing purposes.

The many friends in the paper trade of George Allan, of the Buntin-Reid Company, Limited, Toronto, will regret to learn that he is confined to his room with illness.

The Copp, Clark Co., Limited, Toronto, have prepared a very attractive exhibit of their papeteries, writing papers, envelopes, greeting cards etc., which is on display at their warehouse on Wellington Street, west. A number of new lines are included which are very artistic in design and which have been made for the next Christmas trade.

J. Wilcox, of the Smith Paper Company, Lee, Mass., manufacturers of India and Bible paper, was a business visitor in Toronto last week.

At the regular meeting last week of the Toronto Club of Printing House Craftsmen, A. H. Robson, superintendent of the art department of Rous & Mann, Simcoe Street, gave an illustrated address on "Color and the Munsell Notation System". Among the questions on the order paper which were asked and discussed was one as to why printing showed through on some coated paper and whether it was the fault of the paper or the ink. There was an attendance of nearly a hundred and several new applicants for membership in the club were received.

H. P. Tressidder, who for some years has been the business manager of Printer and Publisher in Toronto, has resigned his position and will join the Hunter, Rose Company's selling force at the beginning of May.

The activities of Premier Drury and his Cabinet as far as the Government's connection with E. W. Backus, the United States lumberman is concerned, are being carefully watched by the Conservative party in the House. Charles McCrea, member for Sudbury, has placed many questions on the order paper, among them being as to the rights, if any, granted to Mr. Backus, or the Fort Frances Pulp & Paper Company, permitting the company to store water or create power on the Seine River. The member also wants to know if the Province has been protected against the possibility of the exploitation of power on the river and an enquiry is made as to whether there is sufficient pulpwood in the area tributary to the Seine, still vested in the Crown, to create a pulp and paper industry. Early answers to the questions have been promised by the Government.

A statement of the work being done by the Government with a view to preventing damage to Canada's forests by insects and fungus outbreaks, was made in the House of Commons last week by the Minister of Agriculture. The Government was fully aware, he said, that considerably more work should be done, and was ever ready to give careful consideration to representations made by of the serious causes of losses to Canadian forest re- the industries concerned in order to assist in the removal sources. Special investigation had been made in regard to the dying balsam and spruce in Eastern Canada, and a scheme of co-operation is contemplated between the owners of some timber limits and the Division of Botany, whereby the services of trained forest pathologists will be available for the study of various diseases affecting balsam and spruce in the Eastern districts.

John Ebbells, of the American Writing Paper Company, Holyoke, Mass., was a caller on the Toronto paper trade last week.

Mr. Jones, Manager of the Kapuskasing mill of the Spruce Falls Company, was a business visitor in Toronto last week.

The same mail brought two samples of coated paper; one from Buntin, Reid & Co., Toronto and the other from Valleyfield Coated Paper Mills, Valleyfield, Que. The former is a sheet of Imperial Art Book, which is a very nice sheet; the latter is a new line at Valleyfield, called Blue Ribbon, a paper that gives the advantage of the smooth coated surface at a moderate price.

WAGES IN THE NEWSPRINT MILLS

The Associated Press under date April 27th issues the following:

"Eleven Canadian and United States paper manufacturers, producing nearly one-half of the newsprint consumed in the United States, to-day signed agreements with union representatives of their employees, increasing wages for all classes of labor five cents an hour. The agreements are for one year beginning May 1, 1923, and affect more than 50,000 men.

The Great Northern, Ontario and St. Croix paper companies granted a union demand for a flat increase of five cents an hour for all classes of skilled and unskilled labor. The other eight companies—Abitibi, Spanish River, St. Maurice, Fort Frances, Minnesota and Ontario, Union Bag and Paper, Hanna and St. Regis—signed an agreement increasing wages five cents an hour for all classes of skilled labor and fixing 40 cents an hour as a minimum for common labor.

The agreement reached between the last eight manufacturers and the representatives of six paper workers' unions was a compromise arrived at after two days of conference. The manufacturers had offered a flat increase of four cents an hour for all classes of labor.

That offer was rejected by the union men who asked for a 10 per cent increase in wages. Yesterday they made a counter proposal which served as a basis of today's negotiations.

A spokesman for the pulp and newsprint industry said today that today's action by the eleven newsprint companies undoubtedly would be followed by the other manufacturers employing union labor, who now were negotiating with their employees on the wage scale for labor which had not made wage adjustments would be affected it was said. It was pointed out that the International Paper Co., one of the largest companies employing non-union labor recently had made wage increases amounting to about eight per cent for all classes of labor."

RESULTS WERE GRATIFYING

A friend in Fort Frances writes:

Under dates of February 26th, 27th and 28th, we gave a free entertainment which consisted of a show entitled "The Workmens' Lesson". The results of this were very gratifying. We wish to assure you that safety first appliances and propaganda are the only things that will succeed in the elimination of casualties and accidents. We consider that we are only doing our duty when we advance the cause—not only for our own factories but for others as well.



MR. H. S. TAYLOR

President, Technical Association of the Pulp & Paper Industry. Mr. Taylor is a prominent mill engineer and the head of H. S. Taylor, Ltd, Montreal

HEAVY SHIPMENTS OF N. S. PULP

Heavy shipments of pulp are being made from Digby and Shelburne and also from St. John. The freighter Keyingham is bound across the Atlantic for Queensboro, England, with a cargo of 5,470 tons, and the steamer Gyp from Port Medway for Rouen, France, with 4,675 tons. Another steamer is expected to load from 3,000 to 3,500 tons at Digby and Shelburne within a month. All these shipments are being made by I. H. Mathers and Son, who are the representatives in Eastern Canada of the Becker Interests.

The steamer Keyingham, after discharging a cargo of Welsh coal at St. John, loaded 1,500 tons of sulphite pulp there and then went to Digby where she loaded 1,700 tons of mechanical pulp, later proceeding to Shelburne, where 2,270 tons of mechanical pulp was placed aboard.

The Gyp also loaded 1,000 tons of sulphite pulp at St. John, and 2,675 tons of mechanical pulp at Digby and at Port Medway loaded 1,000 tons of mechanical pulp.

The pulp shipped from Digby is from the Weymouth Mills, and that from Shelburne and Port Medway from the Clyde Mills. Both mills are owned and operated by the Clyde and Sissiboo Pulp Company.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, May 1.— The local paper trade has not changed to any extent. As a whole, it is fairly good, although some jobbers state that it is spotty in character.

The mills report that orders are coming in at a good rate; some lines are more active than others, in fact in some instances shipments are over-due. In almost every line the position has not varied, business being on a steady basis.

The trade figures for the fiscal year ending March 31 are quite favorable. They show a trade balance of $129,772,400 on the right side compared with an adverse balance of $7,522,304 in the previous year. Our exports of paper and forest products played a principal part in this condition, these ranking second in the list of exports with a total of $228,756,205. In March they showed a gain of over seven million dollars, and were the largest in amount of any of the commodities, pulp and paper holding first place among manufactures.

There is no sign of a slackening in the demand for newsprint. The insistency of the buying may be judged from the fact that in March the exports were 113,450 tons, the highest in the history of the industry. Canadian mills are increasing their production, that for March being 106,361 tons, the best on record. The strides made in this section are illustrated by the following figures of exports to U.K. 1916-17, 481,600 tons; 1922-23, 941,813 tons, an increase of nearly 100 per cent. With the new machines coming into operation our production will be materially increased, and it remains to be seen how this will be absorbed. Judging from the statement made by Mr. P. T. Dodge, president of the International Paper Company, it looks as if he anticipates that the Canadian mills will increase their newsprint business at the expense of American producers. He complains of the lack of protection against European and Canadian competition. Canada, he pointed out, is able to manufacture paper from wood which is obtained largely at a low price from Crown lands without capital investment on the part of manufacturers with water powers advantageously obtained in part from the Government, and with electric power supplied cheaply by private and Governmental producers. Mr. Dodge made another protest against the embargo on the export of pulpwood from Crown lands, and declared that the result of the policy of free trade in paper is that the U. S. is producing from year to year a decreasing percentage of the total consumption of newsprint, while on the other hand, foreign mills, and notably those of Canada, are being rapidly expanded. In time the result will be a great shrinkage in the U. S. newsprint production and the necessity for U. S. publishers to secure their paper from outside countries in which there are no laws to prevent combinations on the fixing of prices.

The agreement as to wages signed in New York on April 27 may have an influence on the price of newsprint for the last half of the year. The agreement between the Unions and eleven Canadian and United States Companies was only arrived at after considerable negotiations, and represents a compromise between the demands of the men and the offers of the companies. The Great Northern, Ontario and St. Croix Companies granted a flat increase of five cents an hour for all classes of skilled and unskilled labor. The other eight companies — Abitibi, Spanish River, St. Maurice, Fort Frances, Minnesota and Ontario, Union Bag and Paper, Hanna and St. Regis — signed an agreement increasing wages five cents an hour for all classes of skilled labor and fixing 40 cents an hour as a minimum for common labor. The agreement is for one year, beginning May 1. Negotiations with other companies have been entered into, and it may be taken for granted that the agreement entered into by the eleven companies referred to will affect the wages paid by non union and union Companies in the paper trade generally. It is satisfactory that a settlement of this question has been made, thus eliminating the possibility of trouble.

The pulp section keeps up very well, as is only natural in view of better grinding facilities, the price of groundwood has receded but it is likely to firm up again when low water conditions set in. Kraft pulp has moved upwards, with a better demand, while sulphite keeps steady. The call for bleached sulphite is still good, and although there is not likely to be an appreciable increase in the buying, the chances are that Canadian mills will have a steady demand. Some of the importers of Swedish pulp in the States have cancelled a portion of their contracts, due to the impossibility of supplying all the requirements on account of the industrial dispute.

Pulpwood is firmer, with an upward tendency. Many large sales have lately been made.

Ontario Market News

The current volume of business, both from a manufacturing and a jobbing standpoint continues somewhat light, although mills are kept busy on commitments made some weeks ago when price increases were in the air. For the most part the jobbers say that April has been disappointing as to volume of sales, which is probably accounted for by the backward spring which has had a detrimental effect on practically all lines of business. The printing trade has shown little signs of improvement and the paper box trade is still rather quiet, which means that the production of the board plants has been curtailed to some extent. Practically no board is coming in from the United States at the present time and importers say that the American mills are making quotations to Canadian consumers for acceptance within five days which is a good indication of the prosperity that is attending the box board industry across the line. The Canadian prices remain firm and are likely to continue unchanged for some months, or as long as the American market remains strong as it is at present. It is estimated that very few of the Canadian board mills have more than three or four weeks orders on hand at the present time whereas, under ordinary conditions, many of the plants have orders ahead for several months. It is generally believed, however, that the paper trade generally in Ontario is liable to recover at any moment and the prevailing conviction is that when it starts off again it will go with a bang, for stocks have been allowed to get very low.

PULP.—There is only a fair amount of activity in pulp circles and comparatively few stocks are being sold. There is, however, a fairly steady volume of business from pulp to paper mill although the transactions are not large. Prices remain unchanged, groundwood being quoted at $35.00: bleached sulphite at from $80.00 to $90.00 (more for special grades) and unbleached at from $55.00 to $70.00 and newsgrade at $56.00. Groundwood stock reserves are said to have been pretty well wiped out.

BLANKS.— A feature of the week was an increase of about ten per cent. in printers' blanks. The various grades of blanks of Canadian manufacture underwent the increase probably in sympathy with the American prices which have been edging up for some time. There is a fair all-around demand for blanks of all descriptions.

BOOK AND WRITING PAPERS.— Mills manufacturing book paper for the publishing trade are quite busy although sales to the jobbing trade are rather light. There is a steady demand for bonds, ledgers and various lines of writing papers and although the era of big orders is not yet to hand the total volume of business for April bulked fairly well both in the jobbing house and the mills.

TWINE. —The twine market continues rather quiet. An increase was recorded during the week in jute twin of from ten to fifteen per cent. probably due to the strike in Dundee and the increase in wages and raw material. Owing to the condition of the cotton market there is somewhat of a scarcity of jute twine and there is difficulty in meeting the demand.

WRAPPING PAPERS. —Mills manufacturing wrapping paper and paper bags have not been so busy of late and the jobbers report trade as unusually quiet. On the other hand a big business is being done in the paper flour sack line which is proving profitable to those mills engaged in their manufacture.

PULPWOOD. —The Thompson- Hyland Lumber Co., Bay Street, Toronto, are entering into contracts for 50,000 cords of pulpwood for delivery during the coming season, 20,000 cords of which will be poplar. There is a growing demand for poplar and prices have stiffened on this wood to some extent. The firm have shipped out all last year's cut of pulpwood with the exception of a few thousand cords which will go forward within the next few weeks. The prices on peeled spruce stand peeled balsam north of North Bay are $8 to $10 a cord f.o.b. cars and peeled poplar $5 to $5.50. South of North Bay peeled spruce and balsam are quoted at $11 to $12 and poplar $7.50 to $8.50. Contracts are being made with settlers and others and cutting will start in May and continue till the close of the peeling season early in August.

NEW YORK MARKETS

New York, April 28 (Special Correspondence.) Reports from some quarters tell of a quieter condition in the paper markets. This apparently is true only as concerns the jobbing trade. Consumers in a good many instances have evidently let up in their buying to some extent, with the result dealers and jobbers are not so rushed as they were, this situation reflecting the fairly heavy purchases by paper users during the past several months and the consequent covering of requirements for a time. Paper mills are reported to be still actively engaged. There has been little or no diminishing of manufacturing operations; if anything, mills are running at greater capacity than hitherto, and are generally said to have orders on file which will keep them producing at the present rate for quite a while to come.

The Federal Trade Commission's report for March shows that activity in the newsprint manufacturing industry has not let down a single bit. During March production of print paper reached a new peak, not only in the United States but in Canada, and the Commission's report shows that mill stocks continued to decline, thus indicating that consumption kept pace with the ouptut or that it exceeded production. U. S. mills produced 129,294 net tons of total newsprint in March, which was substantially over the 114,611 net tons produced in February and also greater than the 127,452 net tons produced in January; comparing also with 117,507 tons in March a year ago, and 105,700 tons in March five years ago.

Combining the reports of the Federal Trade Commission and the Canadian Pulp and Paper Association, it is found that newsprint production reached a new high record on the North American Continent in March last, being over 235,000 tons for both countries. Shipments from mills exceeded this by over 1,000 tons, and reports are to the effect that consumption last month was the heaviest on record except in October, 1922. Normally less newsprint is consumed in the spring than in the fall. High consumption so far this year is taken to indicate that the record of about 2,500,000 tons in 1922 will be materially exceeded in 1923.

United States mills shipped out 132,292 net tons of total newsprint in March, which was about 3,000 tons above the production. At the beginning of March domestic mills held 23,197 net tons of newsprint in stock and at the end of that month stocks had been reduced to 20,199 net tons.

No less an authority than President Philip T. Dodge of the International Paper Company is quoted as saying that newsprint prices are due to advance. Mr. Dodge stated several days ago: "I do not see how newsprint prices can help but be higher, in view of the generally increased wages, higher raw material prices and higher transportation costs." Mr. Dodge intimated that he expects that the present contract price of $75 per ton will be increased to at least $80 for the third quarter of the year.

A new wage agreement has been signed, as reported elsewhere in this issue.

No changes of note have occurred in prices of paper. Quotations are firm in all quarters and consumers apparently are meeting the figures named without hesitancy on such supplies as they require. Book paper is firm and moving in increasing tonnage; wrappings are fairly active, with prices steady; tissues are in good call at previous quotations, and fine papers are wanted in gradually increasing quantities with prices evincing an upward tendency. Box boards are still relatively quiet though there is nevertheless a good movement of boards and prices are maintained at last levels.

GROUND WOOD. —Mechanical pulp quotations continue on a broad range. This seemingly is not due to any fundamental weakness in the market but to weather conditions which have enabled grinders in some localities to increase their output, thus softening prices, and in other districts preventing any quickening of producing operations, thereby holding prices firm.

Enrollment in the Pulp and Paper School of the Institute of Industrial & Domestic Arts has passed the 280 mark!

RAGS. —Most grades of papermaking rags are meeting with a fair demand. Buyers are exercising caution about laying in supplies; that is, most of them are absorbing rags against direct requirements, which is the usual procedure during the spring of the year, yet in the aggregate there is a fairly large movement into mill channels and prices are maintained. Roofing rags continue to sell readily although in comparatively smaller lots than up to a short time ago. New York dealers report securing 1.60 cents a pound f.o.b. this city for No. 1 roofing stock and 1.50 cents for No. 2 packing, while foreign dark cottons are bringing 1.55 to 1.60 cents a pound ex dock in sales to felt paper mills. New cuttings have quieted down to a pronounced degree but prices have changed but little, if at all. Dealers have disposed of sufficient stock recently to enable them to display a more or less independent attitude, and are holding rags at the prices they succeeded in getting in sales a short time back. Old white rags are firmly quoted and are in good demand. A good packing of No. 1 old white is reported commanding 8 cents a pound from fine paper mills, and even this figure has been exceeded in some transactions. Thirds and blues also are moving freely and at steady prices of around 2.65 cents per pound for repacked and 2.25 cents for miscellaneous packing.

PAPER STOCK.— The waste market is still characterized by an easy price tone. Quotations have shown narrower changes this week than in the several previous weeks, but the tendency is downward and such alterations as have occurred have been off in practically every case. Prices have worked down to levels where it is said collections are being affected; reports stating that collectors are going on strike in the contention that they cannot make a profit under prevailing prices.

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80 cents per cord for spruce and 40 cents per [illegible] other pulpwood, or such other rates as may from time to time be fixed by the Lieutenant-Governor in Council, for the right to operate a Kraft pulp mill and a paper mill.

Tenderers shall also be required to say what theey are prepared to pay, per thousand feet Board measure, for the following classes of timber,, over and above the upset prices in addition to Crown dues:

Upset price — Red and White Pine	— $6.00 pr M ft. B. M.
Spruce (too large for pulpwood)	— $5.00 per M. ft. B. M.
Jackpine (banksian)	— $2.50 per M. ft. B. M.

The Crown dues on Pine including Jackpine being $2.50 and on Spruce $2.00 per M. ft. B. M., or such other rates as may from time to time be fixed by the Lieutenant-Governor in Council.

The successful tenderer shall be required to erect a mill or mills within the limit or at some point in Ontario approved by the Minister, and to manufacture the wood into Kraft pulp. and also such portion thereof into Kraft paper when required so to do.

Parties making tenders will be required to deposit with their tender a marked cheque, payable to the Honourable the Treasurer of the Province of Ontario, for fifty thousand dollars ($50,000), which amount will be forfeited in the event of the successful tenderer not entering into agreement to carry out conditions, etc.

The said $50,000 shall remain on deposit until the Kraft pulp mill, as provided by terms and conditions of sale, ,is erected and in operation. Any timber cut in the meantime shall be subject to payment of dues and bonus as accounts for same are rendered. After the said pulp mill is erected and in operation the deposit of $50,000 may be applied on account of bonus dues as they accrue, but the regulation dues as mentioned above shall be paid in the usual manner as returns for cutting of wood and timber are received and accounts rendered.

The highest or any tender not necessarily accepted.

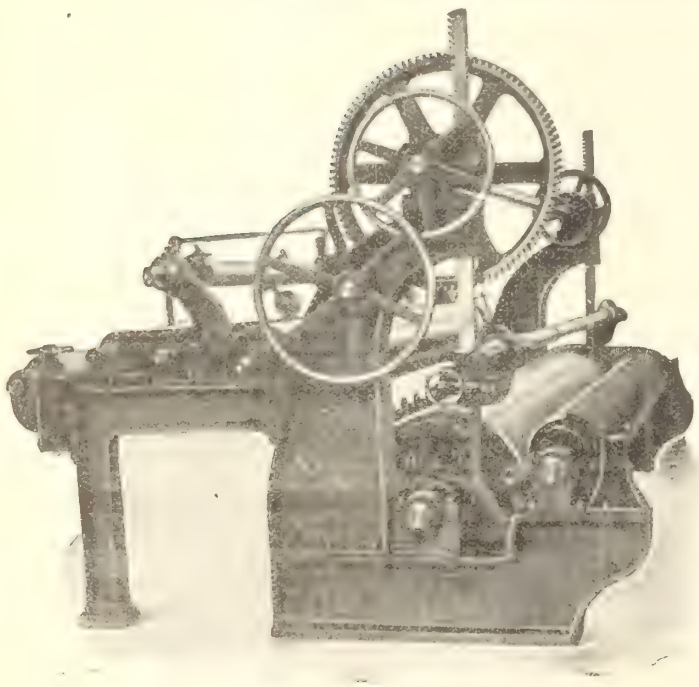
For particulars as to description of territory, capital to be invested, etc., apply to the undersigned.

All tenders should be enclosed in sealed envelopes and marked plainly on outside "Tender for Trout-Chapleau Pulp and Timber Limit."

BENIAH BOWMAN,
Minister of Lands and Forests.

Toronto, April 16th, 1923.

N.. B. — No unauthorized publication of this notice will be paid for.



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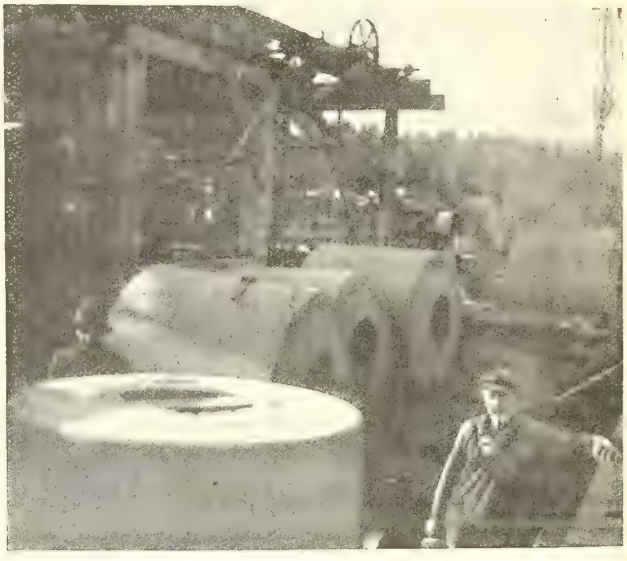
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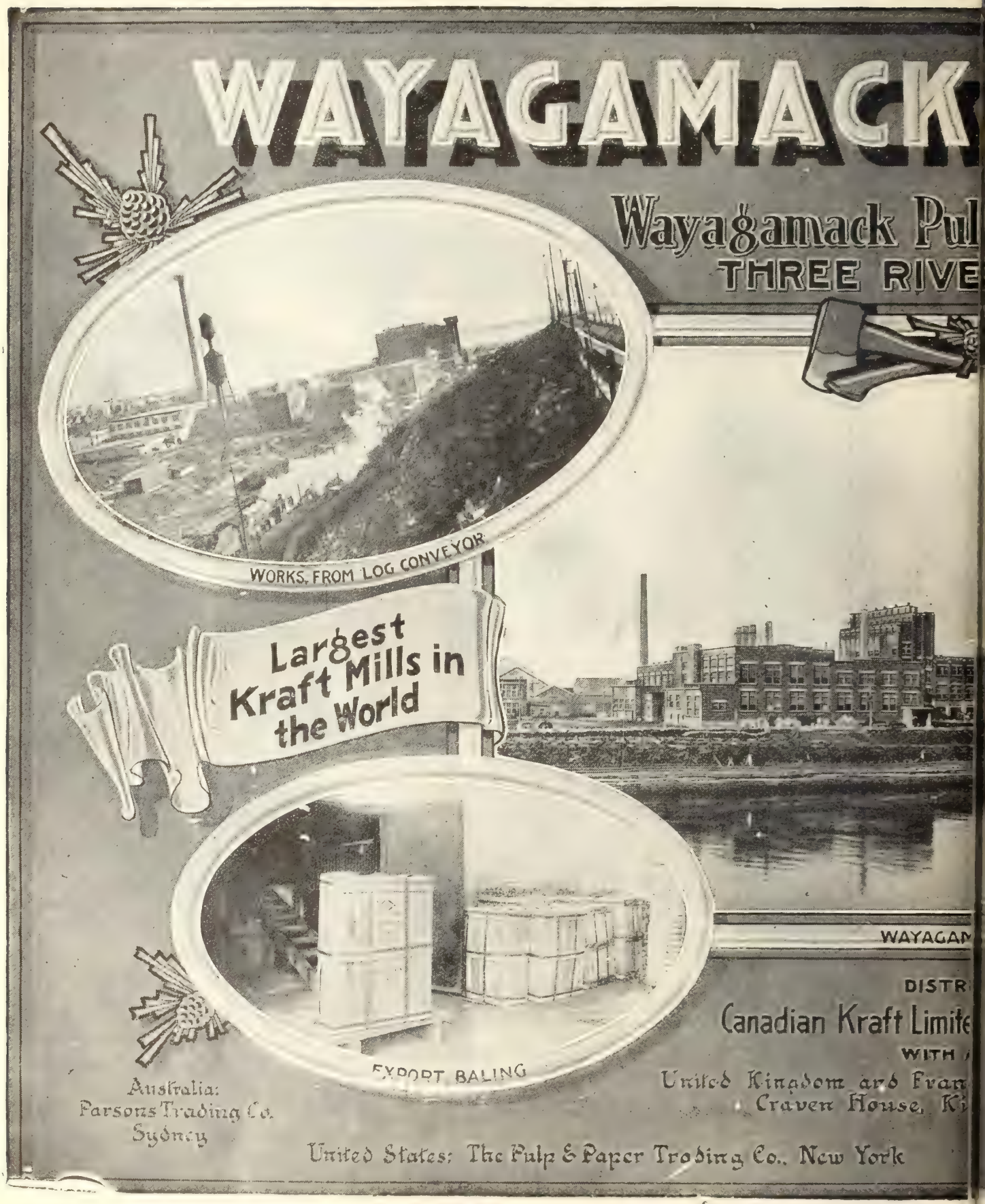
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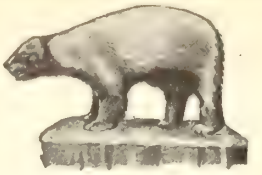
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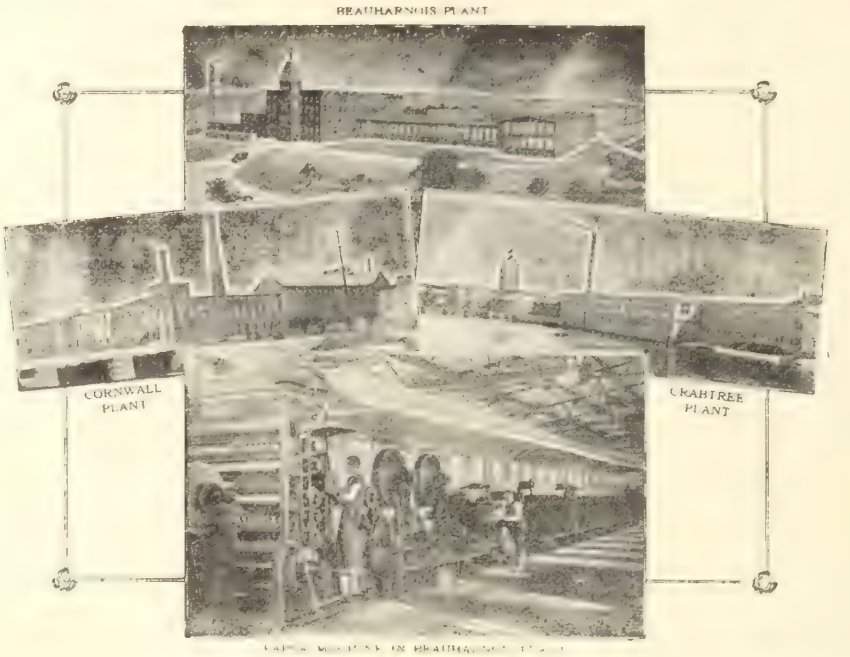
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Can. Vegetable Parchment Co., Ltd.
Garden City Paper Mills Co., Ltd.
Victoria Paper & Twine Co., Ltd.

Specialties:
Beveridge Supply Co., Ltd.
Diamond State Fibre Co., of Can., Ltd.
Can. Nashua Paper Co., Ltd.
Can. Vegetable Parchment Co., Ltd.
Garden City Paper Mills Co., Ltd.
Price Bros & Co., Ltd.
Howard Smith Paper Mills.
Victoria Paper & Twine Co., Ltd.

Soda Pulp:

M. Gottesman & Co., Inc.

Sulphate Pulp (Kraft):
American Woodpulp Corp.
Bathurst Lumber Co., Ltd.
Brompton Pulp & Paper Co., Ltd.
Gottesman, M. & Co., Inc.
Dryden Pulp & Paper Co., Ltd.
Lagerloef Trading Co., Inc.
Wayagamack Pulp and Paper Co., Ltd.

Sulphite Pulp:

Abitibi Power & Paper Co., Ltd.
Acer, J. H. A. & Co., Ltd.
American Woodpulp Corp.
Donnacona Paper Co.
M. Gottesman & Co., Inc.
Lagerloef Trading Co., Inc.
Laurentide Co., Ltd.
Mattagami Pulp & Paper Co., Ltd.
Price Bros & Co., Ltd.
Riordon Sales Co., Ltd.
Spanish River Pulp & Paper Mills Ltd
St. Maurice Paper Co.
Howard Smith Paper Mills.

Tissue and Toilet:

Beveridge Supply Co., Ltd.
Can. Vegetable Parchment Co., Ltd.
Eddy E. B. & Co., Ltd.
Garden City Paper Mills Co., Ltd.
Interlake Tissue Mills Co., Ltd.
Victoria Paper & Twine Co., Ltd.

Wrapping:

Beveridge Supply Co., Ltd.
Brompton Pulp & Paper Co., Ltd.
Can. Vegetable Parchment Co., Ltd.
Dryden Pulp & Paper Co., Ltd.
Eddy E. B. & Co., Ltd.
Garden City Paper Mills Co., Ltd.
Interlake Tissue Mills Co., Ltd.
Spanish River Pulp & Paper Mills.
Victoria Paper & Twine Co., Ltd.
Wayagamack Pulp & Paper Co., Ltd

Sulphite Mitscherlich:

Acer, J. H. A. & Co., Ltd.
American Woodpulp Corp.
Pulp and Paper Trading Co.

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Depends Upon the Uniformity of the Temperature in the Machine Room



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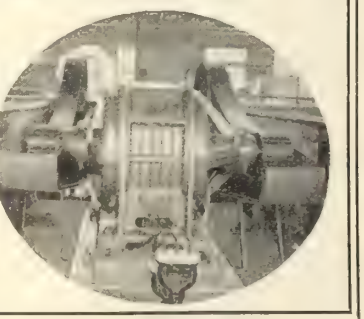
Canadian Distributor — Powerlite Devices, Limited
62 Front St., West, Toronto, Ont. New Birks Building, Montreal, Que.



MORSE DRIVES

Driving Beaters

On right is close up view of Beaters opposite driven by Morse Chains



JONES & GLASSCO Reg'd

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Pont Rouge, Que., Can.

MILL SUPPLIES. — Continued.

Paper Bags:
Beveridge Supply Co., Ltd.
E. B. Eddy Co., Ltd.
Victoria Paper & Twine Co., Ltd.

Parchment Paper:
Can. Vegetable Parchment Co., Ltd

Paper Cores:
Elixman Paper Core Co.

Paper Cutting Machines:
Cameron Machine Co.
Walmsley, Charles & Co., Ltd.

Paper and Pulp Machinery.
American Voith Contact Co., Inc.
Beloit Iron Works.
Beveridge Supply Co., Ltd.
Bertrams, Ltd.
Black-Clawson Co.
Boving Hydraulic & Eng. Co., Ltd.
Cameron Machine Co.
Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Dowingtown Mfg. Co.
Hamilton Co., Ltd., Wm.
Hydraulic Machinery Co., Ltd.
Johnson Wire Works, Ltd.
Norwood Engineering Co.
Mackinnon Steel Co., Ltd.
McAvity & Sons, Ltd., T.
Mills Works & Machinery, Ltd.
Morrison, J. L. Co.
Port Arthur Shipbuilding Co., Ltd.
Pulp and Paper Mill Accessories, Ltd
Pusey & Jones Co.
Sherbrooke Machinery Co., Ltd.
Smith Morgan Co.
Stebbins Eng. & Mfg. Co.
Ticonderoga Machine Works.
Walsh Plate & Structural Works, Ltd
Walmsley, Chas & Co.
Waterous Engine Works Co., Ltd
Wesbye, P .P.

Paper Stock:
Pulp & Paper Mill Accessories, Ltd.

Paper Testers:
Canadian Fairbanks-Morse Co., Ltd.
Perkins, B. F. & Son. Inc.
Waterous Engine Works Co., Ltd

Penstocks:
Dominion Engineering Works, Ltd.
Horton Steel Works, Ltd.
Hamilton, William Co., Ltd.
Hendrick Manufacturing Co.
MacKinnon Steel Co., Ltd.
Walsh Plate & Structural Works, Ltd
White, W. H.

Penstocks, Wood Stave:
Canadian Pipe Company, Ltd
Pacific Coast Pipe Co., Ltd.
White W. H.

Pillow Blocks:
Canadian Fairbanks-Morse Co., Ltd.
Canadian Link-Belt Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Victoria Foundry Co., Ltd.
Waterous Engine Works Co., Ltd

Pipe — Riveted:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.

Pipe — Wood Stave:
Canadian Pipe Company, Ltd.

Pipes — Brass & Copper:
Tallman Brass & Metal Co., Ltd

Pipes — Steel:
Horton Steel Works, Ltd.

Piping — High Pressure:
Canadian Fairbanks-Morse Co., Ltd.
Crane, Ltd.
McAvity & Sons, Ltd., T.
Northern Foundry & Machine Co.

Piping Hydraulic:
Canadian Fairbanks-Morse Co., Ltd.
Dodge Manufacturing Co.
Hydraulic Machinery Co., Ltd.

Plate and Tank Works:
Can. Des Moines Steel Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Can. Chicago Bridge & Iron Co., Ltd
Dominion Engineering Works, Ltd.
Goldie & McCulloch Co., Ltd.
Hamilton, William Co., Ltd.
Hendrick Manufacturing Co.
Horton Steel Works, Ltd.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Walsh Plate & Structural Works, Ltd
Waterous Engine Works Co., Ltd

Plates — Calenders:
Norwood Engineering Co.

Pneumatic Collecting and Conveying Systems:
Sturtevant, B. F. Co. of Canada, Ltd.

Pneumatic Thickeners:
Sherbrooke Machinery Co., Ltd.
Waterous Engine Works Co., Ltd

Pneumatic Tools:
Canadian Ingersoll-Rand Co., Ltd.

Power Factor Correcting Devices:
Griswold & Co.

Power Condensers:
Griswold & Co.

Presses:
Boving Hydraulic & Eng. Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Hydraulic Machinery Co., Ltd.
Northern Foundry & Machine Co.
Port Arthur Shipbuilding Co., Ltd.

Presses — Pulp:
Wm. R. Perrin, Ltd.

Press Rolls:
Bertrams, Ltd.
Dominion Engineering Works, Ltd.
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd
Sherbrooke Machinery C., Ltd.
Waterous Engine Works, Co. Ltd.

Pulleys:
Boving Hydraulic & Eng. Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Canadian Link-Belt Co., Ltd.
Dominion Engineering Works, Ltd.
Hamilton, William Co., Ltd.
Northern Foundry & Machine Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Victoria Foundry Co., Ltd.
Waterous Engine Works, Co. Ltd.

Pulp Slashers:
Hamilton, William Co., Ltd.

Pulp Stones:
American Stone Co., Inc.
Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
International Pulp Stone. Co
Lombard & Co.
Miramichi Quarry Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.
Smallwood Stone Co.
Smallwood-Low Stone Co.

Pulp Stone Burrs:
Can. Fairbanks-Morse Co., Ltd.

Pulp Thickeners:
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.

Pulp Wood:
Crittsinger, Burt C.
New Ontario Colonization Co., Ltd.

Pumps:
Bertrams, Ltd.
Boving Hydraulic & Eng. Co., Ltd.
Can. Fairbanks-Morse Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Carthage Machine Co.
Dominion Engineering Works, Ltd.
Downingtown Mfg. Co.
Goldie & McCulloch Co., Ltd.
Goold Shapley & Muir Co., Ltd.
Hydraulic Machinery Co., Ltd.
Hamilton, Wm. Co., Ltd.
Harland Engineering Co., Ltd.
Lawrence Machine Co
McAvity, T. and Son.
Northern Foundry & Machine Co.
Ontario Wind Engine and Pump Co., Ltd.
Peacock Bros., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Smart-Turner Machine Co., Ltd.
Sherbrooke Machinery C., Ltd.
Victoria Foundry Co., Ltd.
Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co. Ltd.
Weir, Ltd., G. & J.

Pumps — Stock:
Canadian Blower & Forge Co., Ltd
Canadian Fairbanks-Morse Co., Ltd.

Pumps — Boiler Feed:
Canadian Allis-Chalmers, Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Goldie & McCulloch Co., Ltd.
Harland Engineering Co., Ltd.
McAvity, T. and Sons, Ltd.
Northern Foundry & Machine Co., Ltd.

Pyrometers:
The Bristol Co

Rag Cutter Knives:
Beveridge Supply Co., Ltd.
J. W. Bolton & Sons, Inc.
Pulp & Paper Mill Accessories, Ltd

Rails: — Re-laying:
Canadian Equipment Co., Ltd
Gartshore, J. J.

Recording Ammeters:
The Bristol Co.

Recording Instruments:
Canadian Fairbanks-Morse Co., Ltd
The Bristol Co.
Peacock Bros., Ltd.

Recording Wattmeters:
The Bristol Co.

Refiners:
American Voith Contact Co., Inc.
Bertrams, Ltd.
Boving Hydraulic & Eng. Co., Ltd
Can. Fairbanks-Morse Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co. Ltd

Regulators — Steam.
Beveridge Supply Co., Ltd.
Pickles, W. F.
The Under-Feed Stoker Co. of Canada Limited.

Regulators:
Mills Works & Machinery, Ltd.
The Under-Feed Stoker Co. of Canada. Limited.

Reverse Gears:
Canadian Fairbanks-More Co., Ltd.
Russel Brothers.

Rock Drills:
Canadian Ingersoll-Rand Co., Ltd.

Rods — Copper, Brass and Bronze:
Imperial Trading Co.
Tallman Brass & Metal, Ltd.

Rods — Welding:
Tallman Brass & Metal, Ltd.

Roll-Winding Machines:
Cameron Machine Co.
Port Arthur Shipbuilding Co., Ltd.

Roofings — Plastic and Liquid:
Barrett Co., Ltd.
Beveridge Supply Co., Ltd.
Can. Johns-Manville Co., Ltd.
Reed & Co., Ltd., Geo. W.

Rope:
Jones & Glassco.
Goldie & McCulloch Co., Ltd.

Rosin Size:
Hercules Naval Stores
Vera Chemical Co. of Canada, Ltd
Wilson Paterson Co.

Rotary Cutter Knives:
J. W. Bolton & Sons, Inc.
Pulp and Paper Mill Accessories, Ltd

Rotary Sulphur Furnaces:
MacKinnon Steel Co., Ltd.
Stebbins Eng. & Mfg. Co.

Safes:
Can. Fairbanks-Morse Co., Ltd.
Goldie & McCulloch Co., Ltd.

Salt:
The Canadian Salt Co., Ltd.

Salt Cake:
M. Gottesman & Co., Inc.
The Kalbfleisch Corporation

Save-Alls:
Canadian Ingersoll-Rand Co., Ltd.
MacKinnon Steel Co., Ltd.
Pulp and Paper Mill Accessories, Ltd.
Port Arthur Shipbuilding Co., Ltd.
Sherbrooke Machinery Co., Ltd.
Waterous Engine Works, Co. Ltd.

Slitters and Rewinders:
Cameron Machine Co.
Port Arthur Shipbuilding Co., Ltd.

Saw Frames:
Can. Fairbanks-Morse Co., Ltd.
Goold Shapley & Muir Co., Ltd.
Ontario Wind Engine and Pump Co Ltd.
Waterous Engine Works, Co., Ltd.

Scales:
Can. Fairbanks-Morse Co., Ltd.
International Bus. Machines Co. Ltd

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MILL SUPPLIES. — Continued.

Screen Plates:

Bertrams, Ltd.
Union Screen Plate Co. of Canada
Waterous Engine Works, Co., Ltd.

Screens:
American Voith Contact Co., Inc.
Bertrams, Ltd.
Boving Hydraulic & Eng. Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Can. Fairbanks-Morse Co., Ltd.
Can. Link-Belt Co., Ltd.
Hamilton, William Co., Ltd.
Hendrick Manufacturing Co.
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Pulp and Paper Mill Accessories, Ltd.
Sherbrooke Machinery Co., Ltd.
Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co., Ltd.
Westbye, P. P.

Separators — Oil:
Canadian Fairbanks-Morse Co., Ltd.
Goldie & McCulloch Co., Ltd.

Separators — Steam:
Canadian Fairbanks-Morse Co., Ltd.
Crane Co., Ltd.
Foxboro Co., Inc.
Peacock Bros., Ltd.

Shafting:

Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Northern Foundry & Machine Co., Ltd.
Victoria Foundry Co., Ltd.
Waterous Engine Works, Co. Ltd.

Sheet Lead:

The Canada Metal Co., Ltd.

Sheets — Copper, Brass and Bronze:

McAvity & Sons, Ltd., T.
Tallman Brass & Metal, Ltd.

Sheet Samplers:
John Date.

Shingle Machines:
Canadian Fairbanks-Morse Co., Ltd.
Victoria Foundry Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.

Shower Pipes:
Dominion Engineering Works, Ltd.
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.

Shredders:

Size:

Vera Chemical Co., Ltd.

Slab Chippers:
Boving Hydraulic & Eng. Co., Ltd.
Waterous Engine Works, Co., Ltd.

Slitters and Re-Winders:
Bertrams, Ltd.
Cameron Machine Co.
Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Langston Co., Samuel M.
Morrison, The J. L. Co.
Ticonderoga Machine Works.
Walmsley, Charles & Co., Ltd.

Slitting and Roll-Winding Machines:
Cameron Machine Co.

Sinks & Tops — Laboratory, Acid Proof:
Alberene Stone Co.

Smelter Lining:

Alberene Stone Co.
Beveridge Supply Co., Ltd.

Smoke Stacks:
Can. Des Moines Steel Co., Ltd.
Dominion Engineering Works, Ltd.
Hamilton Co., Wm.
Hendrick Manufacturing Co.
Horton Steel Works, Ltd.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Waterous Engine Works, Co., Ltd.

Snow Plows:
Canadian Equipment Co., Ltd

Soda Ash:
Wilson, Paterson Co.

Soot Cleaners:
Beveridge Supply Co., Ltd.

Solder:

Canada Metal Co.
McAvity T. & Son.
Tallman Brass & Metal, Ltd.

Spiral Conveyors:

Canadian Fairbanks-Morse Co., Ltd.
Can. Link-Belt Co., Ltd.
Waterous Engine Works, Co., Ltd.

Splicing Tissue:
Bemis Manufacturing Associates.

Splitters:
Carthage Machine Co.
Hamilton, William Co., Ltd.

Split Pulleys — Wood and Steel:

Canadian Fairbanks-Morse Co., Ltd.
Waterous Engine Works, Co., Ltd.

Sprinkler Tanks:

Can. Des Moines Steel Co., Ltd.
Hendrick Manufacturing Co.
Horton Steel Works, Ltd.

Tanks — Acid:

White, W. H.
Walsh Plate & Structural Works, Ltd.

Sprocket:

Canadian Fairbanks-Morse Co., Ltd.
Can. Link-Belt Co., Ltd.
Hamilton Gear & Machine Co.
Hamilton, William Co., Ltd.
Northern Foundry & Machine Co.
Waterous Engine Works, Co., Ltd.

Stacks:
Dominion Engineering Works, Ltd.
Hamilton, William Co., Ltd.
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.

Stackers:
Canadian Link-Belt Co., Ltd.

Tanks — Iron and Steel:

Horton Steel Works, Ltd.
MacKinnon Steel Co., Ltd.
Walsh Plate & Structural Works, Ltd.
Waterous Engine Works, Co., Ltd.

Steam Appliances:
Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
McAvity, T. and Son.
Pulp & Paper Mill Accessories, Ltd.
Waterous Engine Works, Co., Ltd.

Steam Engines:
Port Arthur Shipbuilding Co., Ltd.
Sturtevant Co. of Canada, Ltd., B. F.
Walmsley, Charles & Co., Ltd.

Steam Regulator:
Beveridge Supply Co., Ltd.
Crane Co., Ltd.
McAvity, T. & Son.

Steam Specialties:
Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Crane Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.
Waterous Engine Works, Co. Ltd.

Steam Shovels:
Canadian Equipment Co., Ltd.

Steel Barrels:
Dominion Engineering Works, Ltd.
Smart-Turner Machine Co., Ltd.

Steel Plate Construction:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.

Steam Turbines:
Canadian Fairbanks-Morse Co., Ltd.
Goldie & McCulloch Co., Ltd.
Sturtevant, B. F. Co. of Canada, Ltd.

Stokers — Mechanical:
Babcock & Wilcox, Ltd
The Under-Feed Stoker Co. of Canada, Limited.

Stones — Pulp:
American Stone Co.
Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
International Pulp Stone Co.
Lombard & Co.
Miramichi Quarry Co.
Pulp & Paper Mill Accessories, Ltd.
Smallwood Stone Co.
Smallwood-Low Stone Co.

Stoneware — Chemical, Acid-Proof:
Alberene Stone Co
Beveridge Supply Co., Ltd.

Stop Log Winches:
Dominion Engineering Works, Ltd.
Hamilton Co., Wm.
Northern Foundry & Machine Co., Ltd.
Foundry, Ltd.

Strainers — Water:

Can. Link-Belt Co., Ltd.
Babcock & Wilcox, Ltd.

Straw Cutters:
Bertrams, Ltd.

Can. Des Moines Steel Co., Ltd.
Dominion Engineering Works, Ltd.
MacKinnon Steel Co., Ltd.

Structural Steel Works:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.
Walsh Plate & Structural Works, Ltd.

Stuff Shests:
Can. Des Moines Steel Co., Ltd.
Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co., Ltd.

Suction Rolls:
Dominion Engineering Works, Ltd.
Hydraulic Machinery Co., Ltd.

Sulphate of Alumina:
H. D. Pochin & Co., Ltd.
Gottesman, M. & Co., Inc.
Imperial Trading Co.
The Kalbfleisch Corporation
Wilson — Paterson Co.

Sulphite Mill Equipment:
Alberene Stone Co.
Beveridge Supply Co., Ltd.
Dominion Engineering Works, Ltd
Hamilton, William Co., Ltd.
Hydraulic Machinery Co., Ltd.
MacKinnon Steel Co., Ltd.
McAvity, T. & Son.
Port Arthur Shipbuilding Co., Ltd
Walsh Plate & Structural Works, Ltd
Waterous Engine Works, Co., Ltd.

Sulphite Pulp:

Mattagami Pulp & Paper Co., Ltd.

Sulphate Mill Equipment:
Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Hamilton, William Co., Ltd.
MacKinnon Steel Co., Ltd.
McAvity, T. & Son.
Port Arthur Shipbuilding Co., Ltd.
Stebbins Eng. & Mfg. Co.
Texas Gulf Sulphur Co.
Walsh Plate & Structural Works, Ltd
Waterous Engine Works, Co., Ltd.

Sulphite Mitscherlich:
M. Gottesman & Co.

Sulphur:

Union Sulphur Co.
Texas Gulf Sulphur Company.

Sulphur Burners:

Hydraulic Machinery Co., Ltd.
Carthage Machine Co.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Stebbins Eng. & Mfg. Co.
Walsh Plate & Structural Works, Ltd
Waterous Engine Works, Co., Ltd.
Walsh Plate & Structural Works, Ltd

Superheaters — Steam:

Babcock & Wilcox, Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Goldie & McCulloch Co., Ltd.

Switchboards:
Canadian Fairbanks-Morse Co., Ltd
Canadian General Electric Co., Ltd.
Harland Eng. Co., Ltd.
Northern Electric Co., Ltd.

Tanks:
Canadian Ingersoll-Rand Co., Ltd.
Can. Des Moines Steel Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Can. Chicago Bridge & Iron Co., Ltd.
Canadian Pipe Co., Ltd.
Dominion Engineering Works, Ltd.
Goldie & McCulloch Co., Ltd.
Goold Shapley & Muir Co., Ltd.
Hamilton, Wm. Co., Ltd.
Hendrick Manufacturing Co.
Horton Steel Works, Ltd.
Ontario Wind Engine and Pump Co. Ltd.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd
Pacific Coast Pipe Co., Ltd.
Reed Co., Ltd., Geo. W.
Toronto Iron Works, Ltd.
Victoria Foundry

Tanks — Acid:
Hendrick Manufacturing Co.

Tanks — Elevated — Steel:
Horton Steel Works, Ltd.

Tanks — Lead Lined:
Barber, W. J. & Co.

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Limited

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MILL SUPPLIES. — Continued.

Tanks: Iron & Steel:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.
Tanks — Welded:
Can. Des Moines Steel Co., Ltd.
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.
Tanks — Ore:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.
Smart-Turner Machine Co., Ltd., The
Waterous Engine Works, Co., Ltd.
Tanks — Storage:
Hendrick Manufacturing Co.
Ontario Wind Engine and Pump Co. Ltd.
Port Arthur Shipbuilding Co., Ltd.
Tanks — Wood:
Canadian Pipe Company, Ltd.
Pacific Coast Pipe Co.
Goold, Shapley & Muir Co., Ltd.
Ontario Wind Engine and Pump Co Ltd.
Port Arthur Shipbuilding Co., Ltd.
White, W. H.
Telephone — Automatic:
Northern Electric Co., Ltd.
Telephone — Apparatus:
Northern Electric Co., Ltd.
Temperature Controllers:
The Bristol Co.
Temperature Instruments:
The Bristol Co.
Canadian Fairbanks-Morse Co., Ltd.
Testers — Green Stock:
John Date.
Tanks, Steel, Pressure and Storage.
Hendrick Manufacturing Co.
Horton Steel Works, Ltd.
Timberland Brokers:
Crittsinger, Burt C.
Can. Woodland & Pulp Agency
Lacey, James D. & Co.
Thermometers:
The Bristol Co.
Canadian Fairbanks-Morse Co., Ltd.
Canadian Ingersool-Rand Co., Ltd.
Thrust Bearings:
Canadian Fairbanks-Morse Co., Ltd.
Kingsbury Machine Works.
Tissue — Splicing:
Bemis Manufacturing Associates.
Towers:
Horton Steel Works, Ltd.
Hendrick Manufacturing Co.
Walsh Plate & Structural Works, Ltd.
Tower Linings:
Beveridge Supply Co., Ltd.
Stebbins Eng. & Mfg. Co.
Transformer:
Northern Electric Co., Ltd.
Transmission Machinery:
Boving Hydraulic & Engineering Co. Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Can. Link-Belt Co., Ltd.
Hamilton Co., Ltd., Wm.
Port Arthur Shipbuilding Co., Ltd.
Renold of Canada, Ltd., Hans.
Waterous Engine Works, Co., Ltd.
Traps — Steam:
Can. Johns-Manville Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Crane Co., Ltd.
Goldie & McCulloch Co., Ltd.
Sturtevant, B. F. Co. of Canada, Ltd.

Travelling Cranes:
Boving Hydraulic & Eng. Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Smart-Turner Machine Co., Ltd.
Trolleys:
Boving Hydraulic & Eng. Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Northern Crane Works, Ltd.
Smart-Turner Machine Co., Ltd.
Waterous Engine Works, Co., Ltd.

Troughs:
Hendrick Manufacturing Co.
Trucks:
Hamilton Gear & Machine Co.
Canadian Fairbanks-Morse Co., Ltd.
Northern Crane Works, Ltd.

Trucks — Pulp:
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.

Tubes — Copper, Brass, Bronze:
Tallman Brass & Metal, Ltd.
McAvity & Sons, Ltd., T.

Tubes Cleaners:
Babcock & Wilcox, Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.

Turbines:
Boving Hydraulic & Eng. Co., Ltd.
Dominion Engineering Works, Ltd.
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ALPHABETICAL LIST OF ADVERTISERS

See Classified List on Page 73.

Unpaged advertisements appear in every other issue

A

Alberene Stone Co., Ltd 72
Abitibi Power & Paper Co. Ltd. . . 84
Acer, J. A. H. & Co., Ltd. 74
American Voith Contact Co., Inc. . .
American Stone Co. 24
American Woodpulp Corporation . . 24
Ayers, Limited 11

B

Babcock & Wilcox, Ltd. . . . . .
Barrett Co., Ltd., The . . . . . .
Barber, W. J. & Co., Ltd. . . . . .
Bathurst Company, Ltd. 82
Bates & Innes, Ltd. 25
Bemis Manufacturing Association .
Bertrams, Limited . . . . . .
Belgo Paper Co., Ltd., The 82
Beveridge Supply Co., Ltd. . . . . .
Black-Clawson Co., The . . . . . .
Bolton, John W. & Sons, Inc. 26
Boving, Hydraulic & Engineering Company, Ltd 18
Bristol Co., The 80
Brompton Pulp & Paper Co., Ltd. . . 82
Burgess, E. T 30

C

Canada Metal Co., Ltd 67
Cameron Machine Co. 87
Canadian Combustion Co., Ltd. . . 19
Canadian Barker Co. 6
Canada Foundries & Forgings, Ltd. 72
Canadian Des Moines Steel Co., Ltd. 27
Canadian Elixman Co., ,Ltd. 10
Canadian Equipment Co., Ltd. . . . .
Canadian Fairbanks-Morse Co., Ltd. 32
Canadian Ingersoll-Rand Co., Ltd. .
Canadian Johns-Manville Co., Ltd. .
Canadian Nashua Paper Co , Ltd. . . 86
Canadian Paperboard Co., Ltd. . . 24
Canadian Link-Belt Co., Ltd. . . . .
Canadian Robert Dollar Co.,, Ltd. . .
Canadian Pipe Co., Ltd. . . . . .
Canadian Sirocco Co., Ltd. . . . . .
Canadian S K F Co., Ltd. 89
Canadian Vegetable Parchment Co., Limited . . . . . .
Canadian Westinghouse Co., Ltd. . .
Carey, Jas. L. 22
Capital Wire Cloth & Mfg. Co., Ltd. 26
Christie, George, Ltd. . . . . .
City of Hull . . . . . .
Claflin Engineering Co., The 22
Clayton, Neil & Jones, Ltd. . . . . .
Combustion Engineering Corporation, Ltd . . . . . .
Crane, Ltd. . . . . .
Crittsinger, Burt Co., Inc. . . . . .
Cleveland Stone Co., The . . . . . .

D

Date, John . . . . . .
Deitcher Brothers 87
Dept. of Lands, Forests & Mines Ontario 67
Dodge Mfg. Co. of Canada, Ltd. . .
Dominion Belting Co. . . . . .
Dombinion Engineering Works, Ltd. 21
Dominion Oxygen Co., Ltd. 5
Donnacona Paper Co., Ltd., The . . 24
Don Valley Paper Co., Ltd., The . . 24
Downingtown Mfg. Co. 25
Dryden Paper Co., Ltd. 24
Dunlop Tire & Rubber 74
Dunham, C A. Co. 19

E

Elixman Paper Core Co., Inc. 10
Elk Fire Brick Co. of Canada, Ltd. 30
English China Clays, Ltd. 1
Engineering & Machine Works of Canada, Ltd 16

F

Ferguson, H. S. 23
Ford, J. & Co. . . . . .
Foundation Co., Ltd. 22

G

Galt Knife Co., Ltd. 27
Garden City Paper Mills, Ltd . . . 72
Geigy Co., Inc. 72
Goldie & McCulloch Co., Ltd. . . .
Goold, Shapley & Muir Co., Ltd. . . 26
Gottesman, M. & Co. 29
Grasselli Chemical Co., Ltd., The . .
Graton & Knight Mfg Co., The . .
Griswold & Co. 69
Gutta Percha & Rubber, Ltd . . . 12

H

Hamblet Machine Co. . . . . .
Hamilton Gear & Machine Co 87
Hamilton, Wm. Co. of Canada, Ltd.
Hans Renold of Canada, Ltd. . . . .
Hardy, George F. 22
Harland Engineering Co. of Canada
Hay Knife Co., Ltd., Peter . . . . .
Hendrick Mfg. Co. . . . . .
Hercules Powder Co. 69
Holliday, L B. & Co., Ltd. 78
Huestis, A. M. 86
Hydraulic Machinery Co, Ltd. . . 3

I

Ideal Patents Corporation 20
Industrial Engineering Co, Ltd. . .
International Business Machines Co., Ltd. 23
International Pulp Stone Co., The . 27
Interlake Tissue Mills, Ltd. . . . .

J

Jenkins Brothers, Ltd. 29
Jenssen Co., G. D. 23
Johnson Wire Works, Ltd., The . . 30
Jones & Glassco, Regd. 80

K

Kalbfleisch Corporation, The 86
Kander Paper Stock Co., Ltd., The 24
Kenwood Mills, Ltd. 13
Kimball, Herbert S. 22
Kingsbury Machine Works . . . . .
Klipstein & Co., Ltd., A. . . . . .

L

Lacey, James D & Co. . . . . .
Lagerloef Trading Co. 65
Langston, Samuel M. Co. 27
Laurentide Co., Ltd. 84
Lawrence Machine Co. . . . . .
Lombard & Co. Inc. 27

M

Macpherson Co., The A.. 10
Management Engineering & Development Co., The 23
Mead, Patton & Co., Inc. . . . . .
McAvity, T & Sons, Ltd. 32
McKinnon Steel Co., Ltd. 87
Mills Works & Machinery, Ltd. . . . 80
Miramichi Quarry Co., Ltd., The . . 69
Montabone, J. A. F. . . . . .
Montreal Locomotive Works, Ltd. . 18
Morrison, J. L. Co . . . . . .

N

National Paper Stock Co., The 24
New Ontario Colonization Co., Ltd. 26
Niagara Wire Weaving Co., Ltd. The 74
Northern Crane Works, Ltd. . . . .
Northern Electric Co., Ltd. . . . . .
Northern Foundry & Machine Co .
Norwood Engineering Co. of Canada, Limited 26

O

Oliver Continuous Filter Co. 4
Ontario Wind Engine & Pump Co., Limited . . . . . .

P

Pacific Coast Pipe Co., Ltd. . . . .
Patton, Mead & Co., Inc. . . . . .
Peacock Brothers, Ltd . . . . . .
Penmans, Limited 20
Pochin, H. D. & Co., Ltd. 10
Pollack Bros. & Co., Ltd. . . . . .
Port Arthur Shipbuilding Co., Ltd. 28
Porritts & Spencer Co., Ltd . . . .
Price Bros. & Co., Ltd. 76
Price & Pierce, Ltd. 82
Provincial Paper Mills, Ltd. . . . .
Pusey & Jones Co , The 17
Pulp & Paper Trading Co., The . .
Pulp & Paper Mill Accessories, Ltd. 85

Q

Quarries, C. & M. Co. 69

R

Reed, Geo. W. & Co., Ltd . . . . . .
Relph, Darwen & Pearce . . . . . .
Rolland Paper Co , The . . . . . .
Ross Engineering of Canada, Ltd. . 8
Roy, B. & Son Co. . . . . .
Russell Brothers 72

S

Sadler & Haworth . . . . . .
Sewall, Jas. W. 22
Sherbrooke Machinery Co. 9
Smallwood Stone Co., The 24
Smallwood Low Stone Co., Ltd. . . 27
Smith Foundry Co., Ltd. The . . . .
Smith Howard Paper Mills, Ltd. . . 78
Spanish River Pulp & Paper Mills, Limited 86
Sterling Electrical Co., ... 22
Stinson-Reeb Builders' Supply Co., Limited . . . . . .
Stebbins Engineering & Mfg. Co 68
St. Maurice Paper Co., Ltd. . . . .
Sturtevant Co. of Canada, Ltd. . . 87

T

Tallman, Brass & Metal, Ltd. . . . 74
Taylor, H. S., Ltd. 23
Texas Gulf Sulphur Co. . . . . .
Ticonderoga Machine Works 68
Tippett & Co., Ltd. 28
Tyler, W. S. Co., The 27
Trimbey Machine Works 17

U

Underfeed Stoker Co of Canada,, Ltd. 2
Union Screen Plate Co. of Canada, Limited 87
Union Sulphur Co., The 30
United Wire Works, Ltd. 28

V

Vera Chemical Co. of Canada 22
Victoria Foundry Co., Ltd. 21
Voorhees Rubber Mfg. Co. 22

W

Wallace, John H. & Co., Ltd. . . . 23
Wardlaw, T. D. & Son 72
Walmsley, Charles & Co., Ltd. . . 14-15
Warren, Kenneth L. 22
Warwick Woollen Mills, Ltd. . . . 28
Watford Engineering Works, Ltd. . 7
Waterous Engine Works 90
Wayagamack Pulp and Paper Co., Limited 70-71
Weir, G. & J. (Canada), Ltd . . . .
Westbye, P. P. . . . . .
White, W. H. 23
Whyte, William 23
Wilson Patterson Co., The . . . . .
Wood Pulp Trading Co., Ltd. . . . 66

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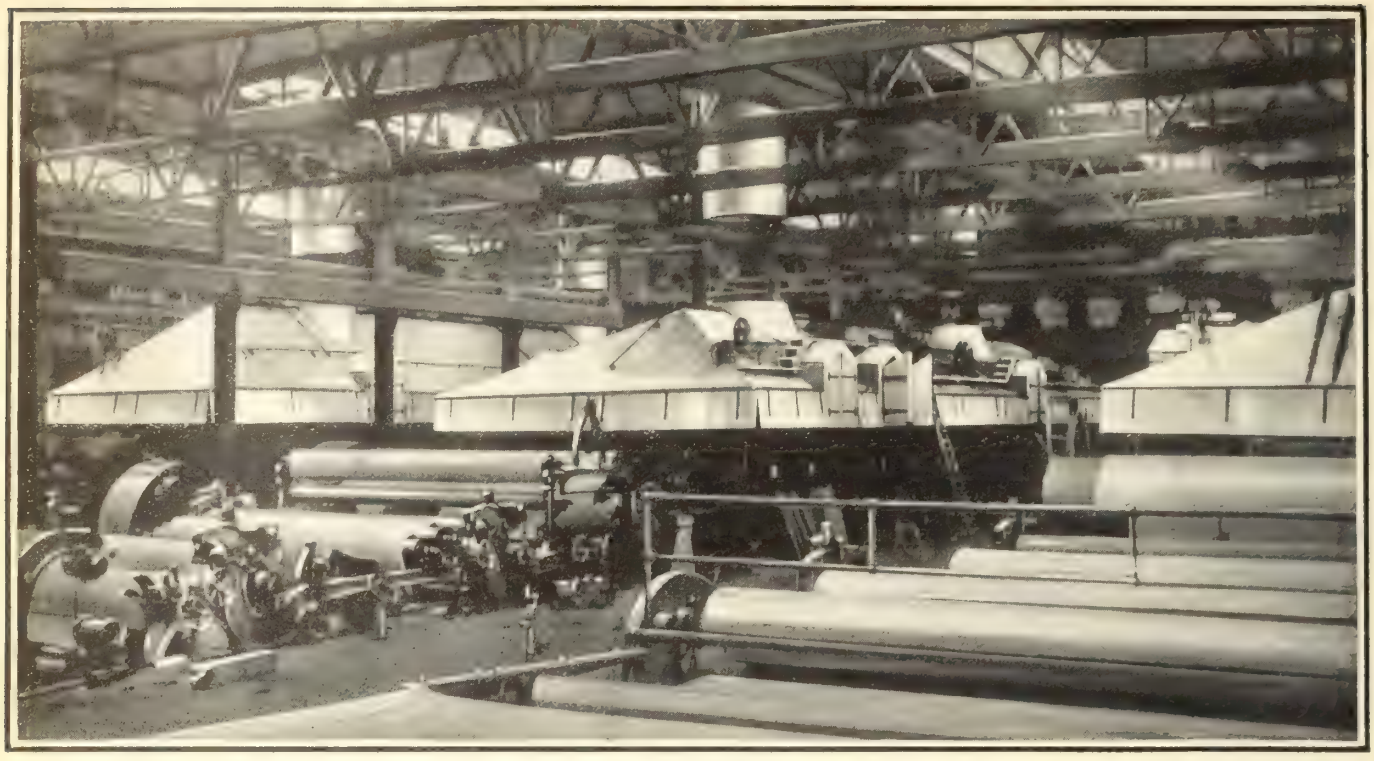
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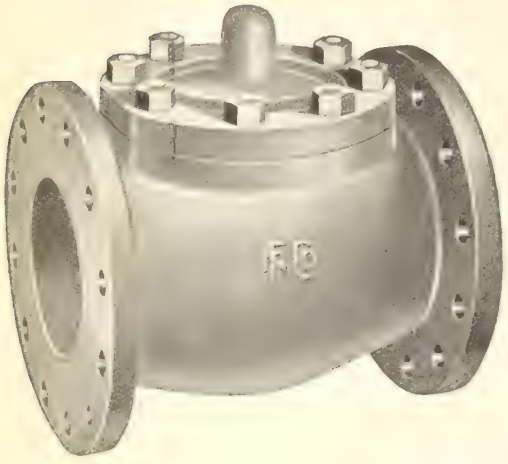
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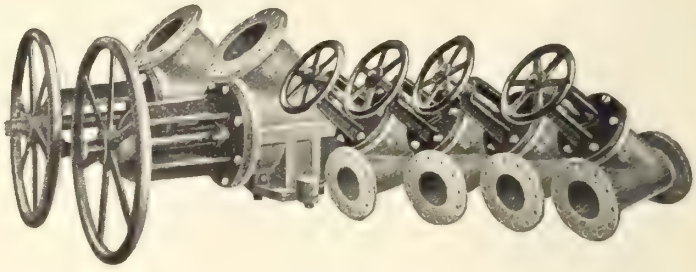
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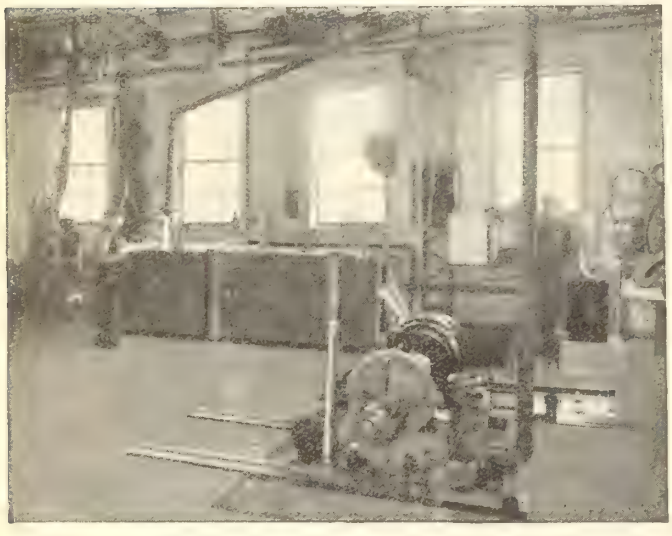
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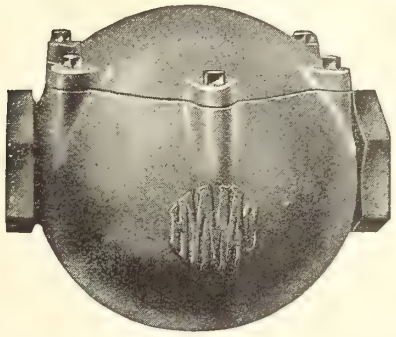
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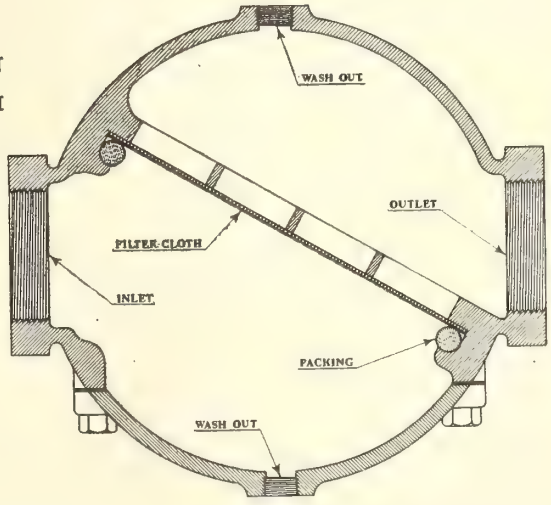
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THREE AND ONE HALF INCH
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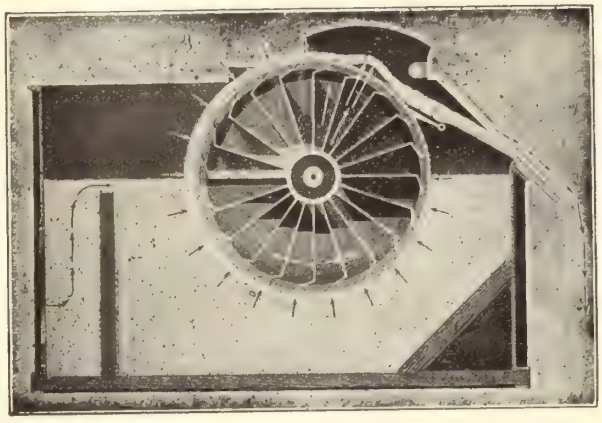


Diagram illustrating Cross Section of Pneumatic Save-All, showing direction of Air Pressures and Formation of Film of Fibres

Money SAVED pays dividends. Our Save-All is earning a million dollars a year for its users by saving waste fibre. We are now on trail of the other millions which are still flowing away each year in waste water.

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(2) He knows that in every industry in the world financial success rests, in a very great degree, upon preventing waste, in finding and stopping up, one by one, every possible source of loss.

(3) He knows that great progress has been made, in his own business, by instituting wise economies — real economies—in management, in production, in the marketing of his product.

(4) And yet he knows that until recently very little progress has been made in preventing the enormous but hidden losses through waste water that is rich in fibre.

(5) He knows all about the schemes that have been exploited and the costs incurred in trying to save this waste, and that as a rule this waste still goes on because the measures tried have not proved capable of preventing it.

(6) Nevertheless, a way exist to save waste fibre successfully. The engraving gives an idea of this way, and we request only the opportunity to tell every mill owner and superintendent all about it.

(7) The reason of our success in this line is that we have found the one natural method of catching and holding the fibre as it flows away in the white water, and have applied this method in our Pneumatic Save-All.

(8) In the engraving our Pneumatic Save-All is shown in cross section. Inside the cylinder mould we produce a very slight vacuum, by a blower. The waste water is lightly sucked through the screen and drains away while the fibers are trapped and held upon the outside. They cannot rub off; they cannot slip through; for they are pressed flat upon the screen by air pressure. (See the inwardly pointing arrow heads.) At the top of the circle each section of the cylinder in turn comes under the direct action of the pressure side of the blower, and the film of pulp is lifted off (see the outwardly pointing arrows) onto a deflector. One Save-All and blower take only 5 H.P.; and the same blower, with very little extra power, will serve two Save-Alls.

We have installed hundreds of them in mills where old methods had proved useless, and where we have had to prove both the existence of heavy losses and the power of our Save-All to prevent them.

SHERBROOKE MACHINERY CO., Limited

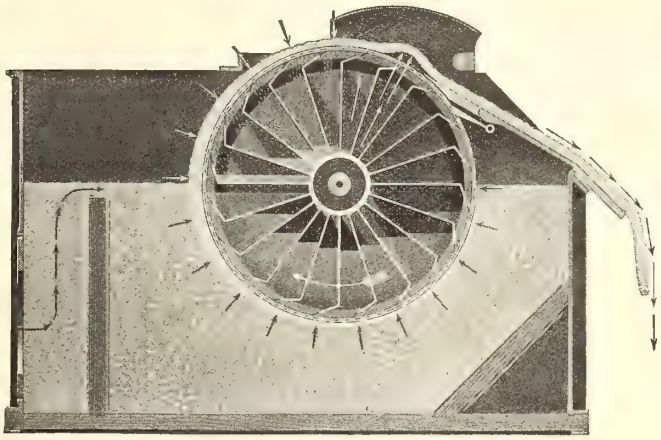
SHERBROOKE - Quebec

THE PNEUMATIC PROCESS OF THICKENING PULP

SIMPLE, DIRECT, ECONOMICAL AND AUTOMATIC

THIS process is now in general use. It is installed in many prominent mills as their standard method, and has been in service over a period of several years, so that it is thoroughly established.

With our Pneumatic Thickener, the stock from screens is thickened directly to the density desired for the beaters, and is delivered to the beaters without going through the usual process of forming "laps" on a wet machine. The wet machine is used only for thickening stock to store or ship.



We particularly advise this method for thickening sulphite and soda pulp, as it delivers this class of stock in a perfectly smooth mass of uniform density, and our customers say that they have never before accomplished this result so successfully, even with wet machines.

The pneumatic method, being simple, direct, and automatic, is operated at far lower cost than is possible with wet machines.

In the special pneumatic pulp-thickening machine which we build the stock is thickened on a revolving cylinder mold by suction, and is removed by air-pressure. This action is rendered so uniform that all irregular thickening of stock is prevented. For example: if you desire to thicken to 3 per cent, we guarantee our Pneumatic Thickener to work at that point within ¼ of 1 per cent when properly installed.

Usually the Pneumatic Thickener is placed at an elevation sufficient to flow the filtered water back to the screens under the desired head, although it may be located wherever desired. It occupies a floor-space of approximately 6 x 12 feet.

We believe this method to be the cheapest to operate and maintain that is now in use.

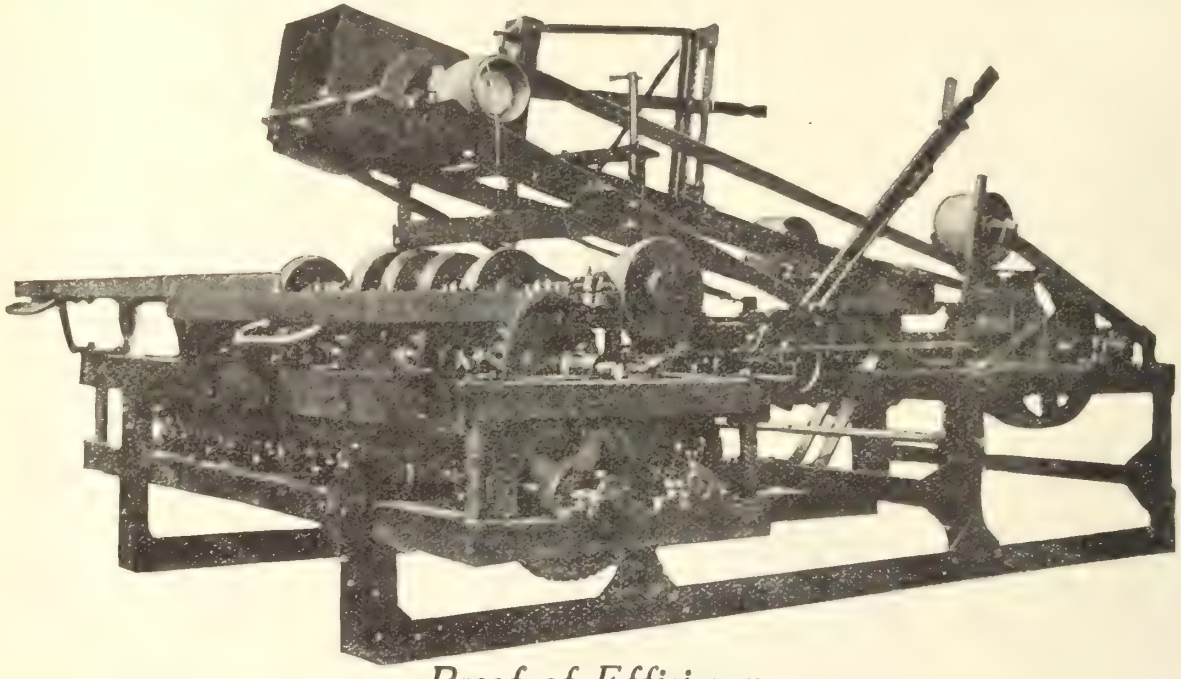
The entire process is automatic and continuous. It dispenses with the costs of power and labor required in wet machine operation, and its sole cost is the slight expense of power required by the blower and to revolve the cylinder mold. Moreover, it occasions less waste of stock than the wet machine or the decker.

Investigation Warranted

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"J. & C." PORTABLE ROSSER



Proof of Efficiency

Test made at Colby Siding, Me. September 17, 1920, in the presence of:

G. B. Burr, Bangor, Me. and G. F. Higgins, Presque Isle, Me.

In the interest of:

Stebbins Lumber Co., Boston, Mass.

	Before Rossing	After Rossing	Loss	% Loss
No of pcs.	40	40	0	0%
Weight of Wood	2232#	1777#	445#	20%
Girth	999"	920"	79"	8%
Content	0.5cds	0.46	0.04	8%

Note: Wood had been cut four months, and dry piled; 40% fir.

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PULP and PAPER MAKER'S FELTS

Largest Plant of the kind in the Dominion, ranking amongst the most modern FELT FACTORIES in the World.

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The Attainment of an Ideal

"FELTS
WASHED
WITHOUT
SHUTTING DOWN
PAPER MACHINES"

The Patented "Ayers" FELT WASHER attains this ideal for which paper makers have long been striving. By the means of this device, the work of cleaning and washing the Felts is done without stoppage of the machinery and, in the case of news print or similar paper, without breaking or crushing the sheet.

PATENTED IN U.S.A., CANADA AND EUROPEAN COUNTRIES.
PATENTS APPLIED FOR IN JAPAN AND MEXICO.

Already in operation in some of the largest Paper Mills where it is recognized as indispensable and a great money saver.

Privilege to install this FELT WASHER readily granted by AYERS LIMITED to all its customers on most reasonable terms.

Full particulars given upon application.

A special Felt has been designed for use in conjunction with this Felt Washer wherever it is in operation.

These two essential factors — "AYERS FELTS and FELT WASHER" — in perfect team work — make for efficiency, economy and genuine satisfaction in the Paper Mill.

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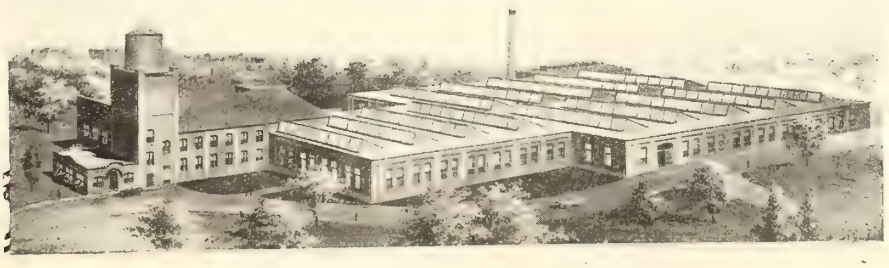


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Which has given an output as large as 90 tons in 24 hours.

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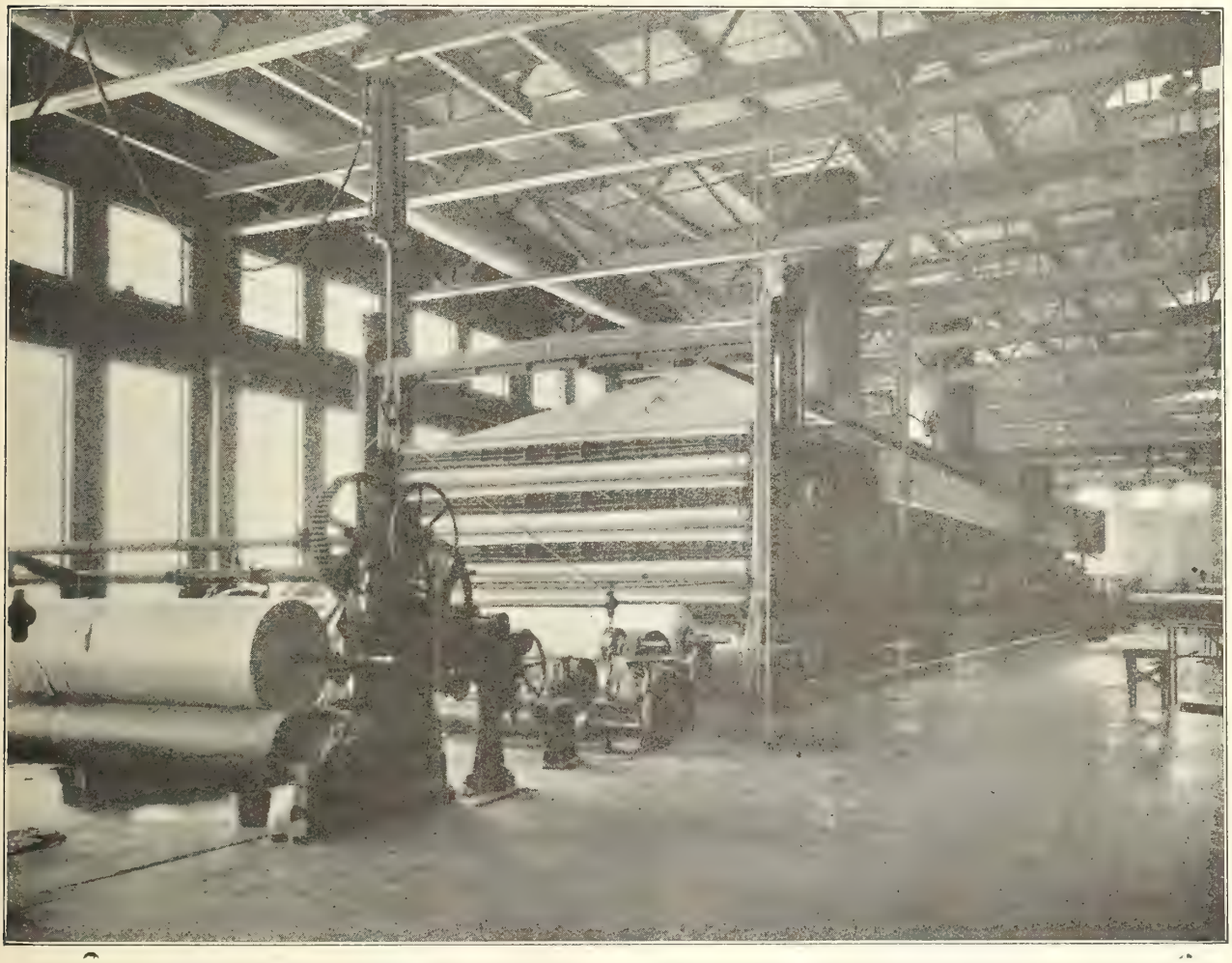
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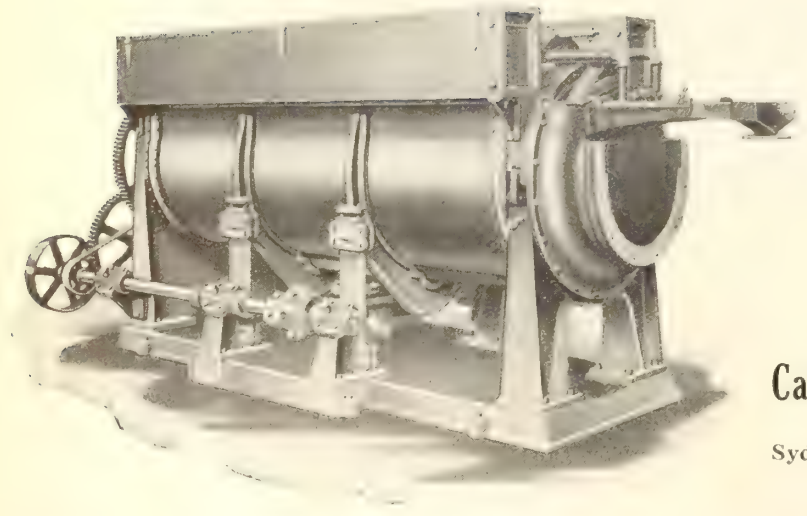
Dirty pulp provides a sheet indifferent in appearance and strength, costly to produce, but of little worth.

On the machine itself, lumps, strings and slime, are increasingly troublesome, as the speed climbs up and every break means a lot of work.

Time lost for blowing out also causes greater loss in production, as, naturally, the higher the speed of the machine, the more paper is or is not made in a given time.

Good screening equipment is therefore a necessity and if versatility; number and standing of users; universal satisfaction or accurate data regarding probable performance in your mill — based on the hundreds now in use — mean everything, then "Bird" Screen are the ones you want.

There is no other screening equipment on this continent, or in Europe; that has proved so successful on so many kinds of stock — and no matter what the class of product, it is nearly always possible to draw a parallel from an existing installation.

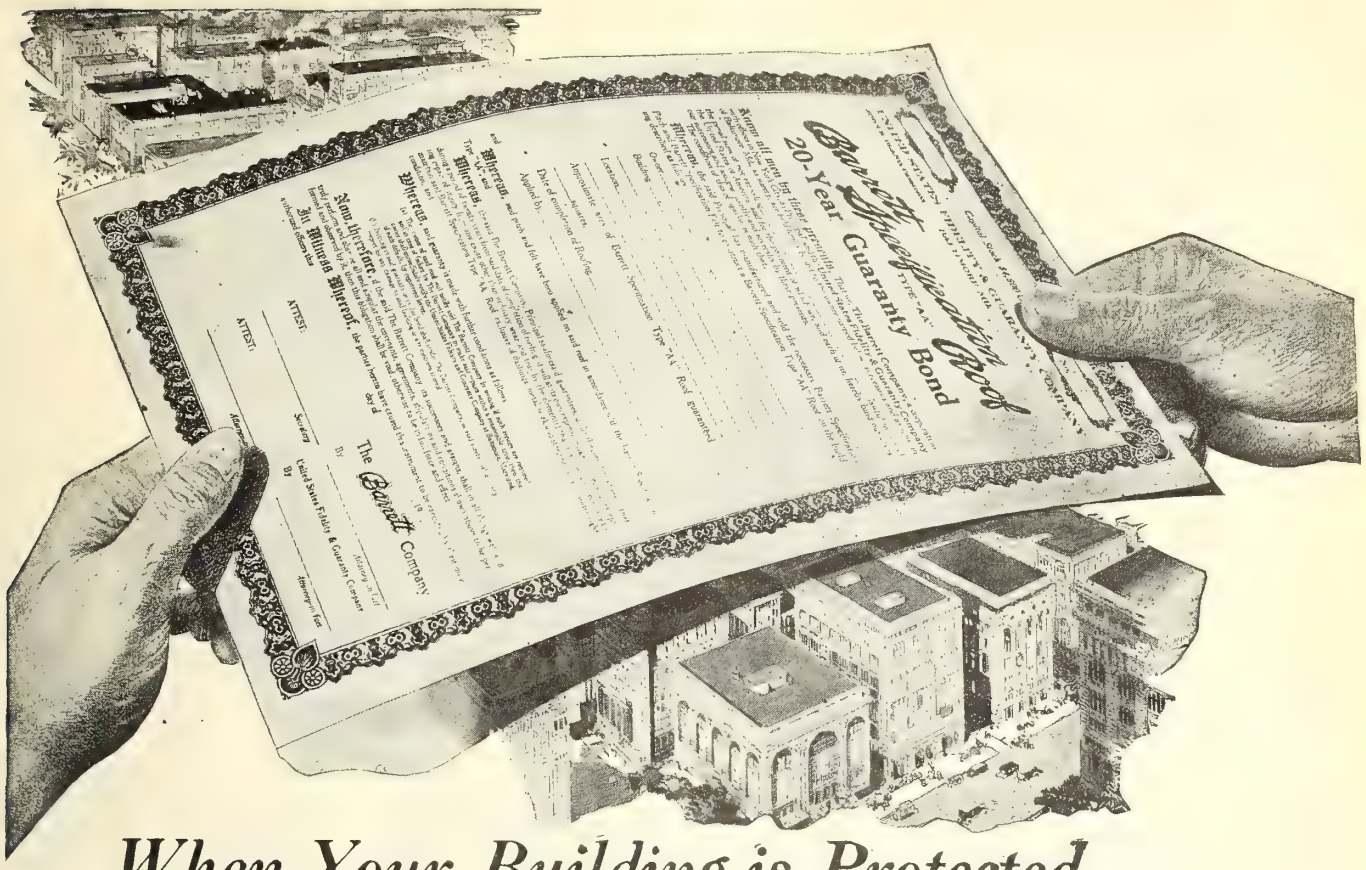


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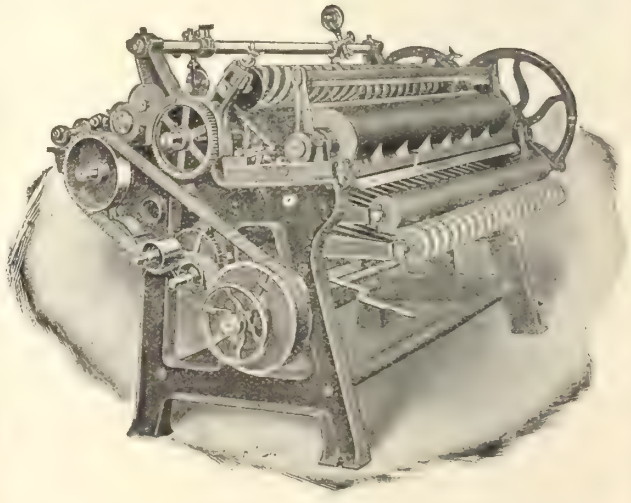
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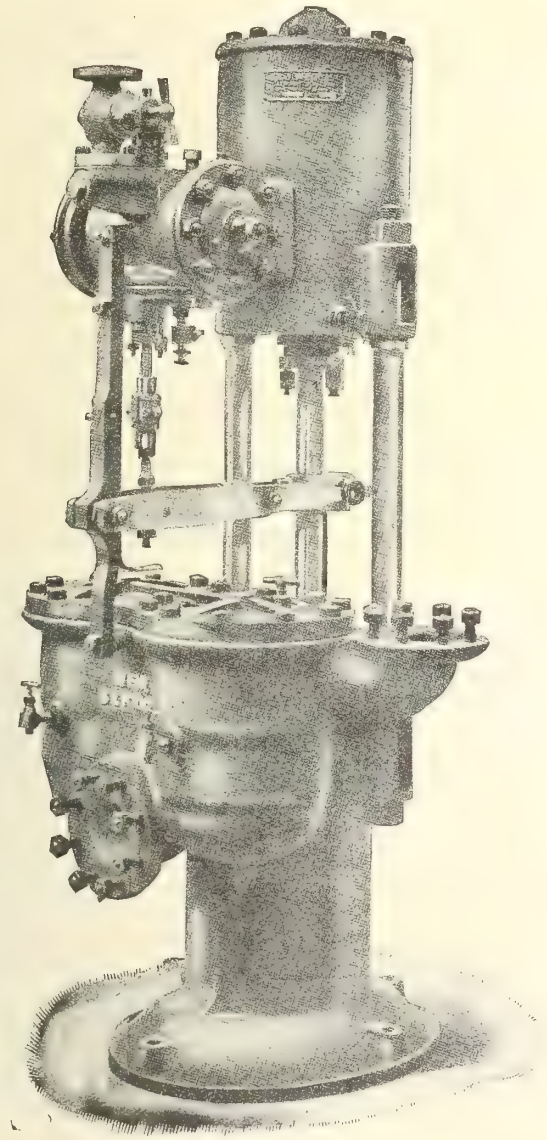
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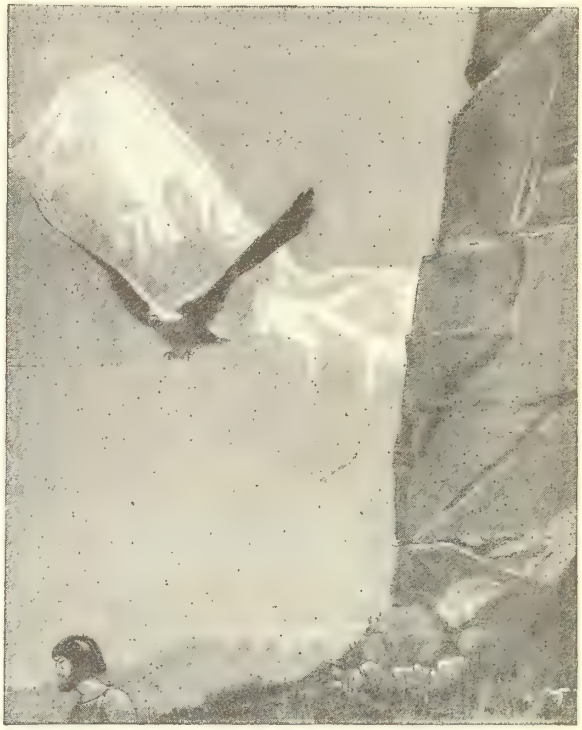


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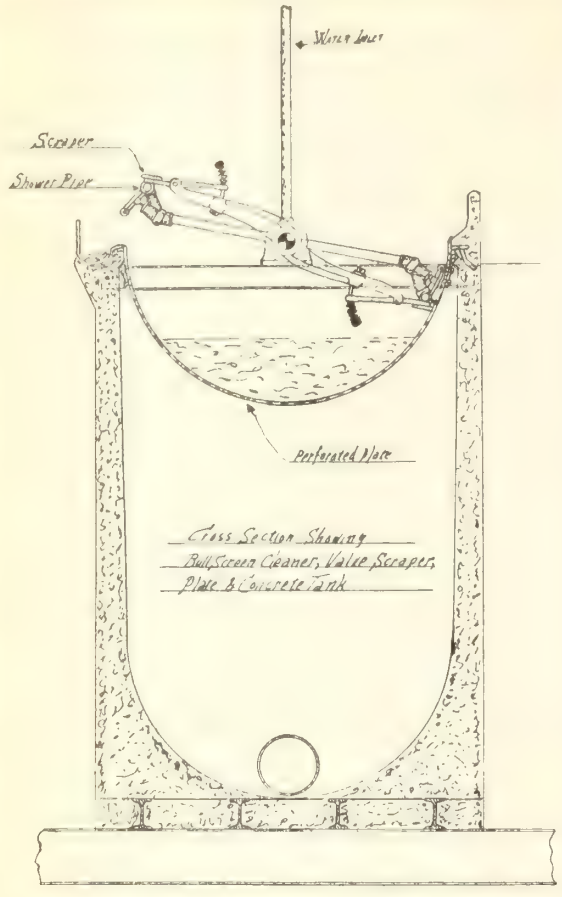
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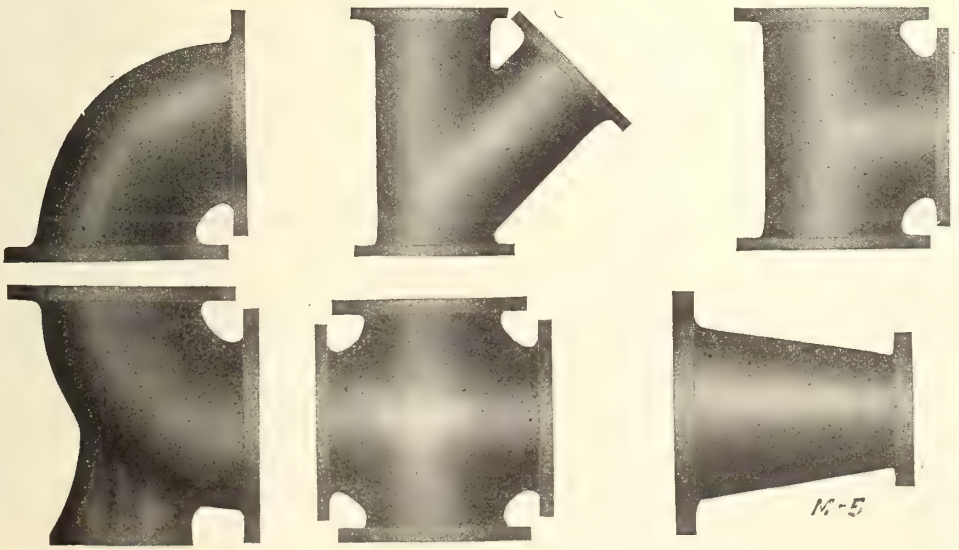
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"In regard to the beaters and bandless rolls you furnished us, I am very glad to state that they are very satisfactory.
We are making 60 tons per day with six of your beaters, which is 10 tons per 24 hours for one beater.
We filled the rolls in the summer of 1919 and have been running them continually night and day since, without spending a cent on repairs. The bars in the rolls look as if we will get another year's service out of them. This, you will agree with me, is quite a record for a felt mill.
We have no trouble whatever with loose bars or wood during the life of the fly bars, and when refilling the bars are easily removed and does not require skilled help to do so. Our two repair helpers remove the bars in six hours; we burn the bars between the heads and drive them out with a sledge.
We are driving our beaters, as you know, with Morse chain drives, direct from 150 H.P. electric induction motors, each driving two beaters. The ammeter shows 175 to 200 amperes with roll down on plate.
In my opinion your bandless type roll is the best on the market for a roofing mill."

Mr. Furlong's felt mill experience with Downingtown Beaters is similar to reports from superintendents using them for other grades. Write for our beater catalog — and read how the fly bars are securely held in our Bandless Rolls without keys, wedges, etc.

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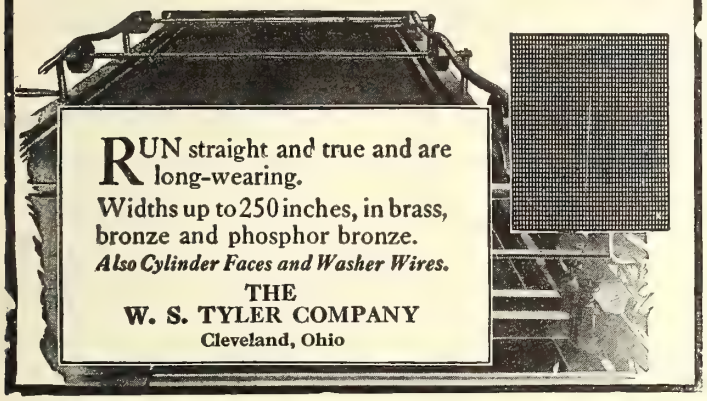
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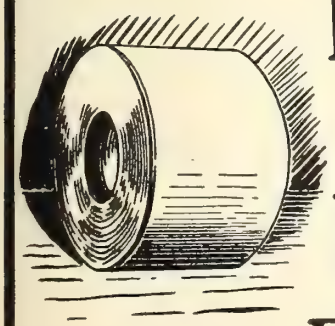




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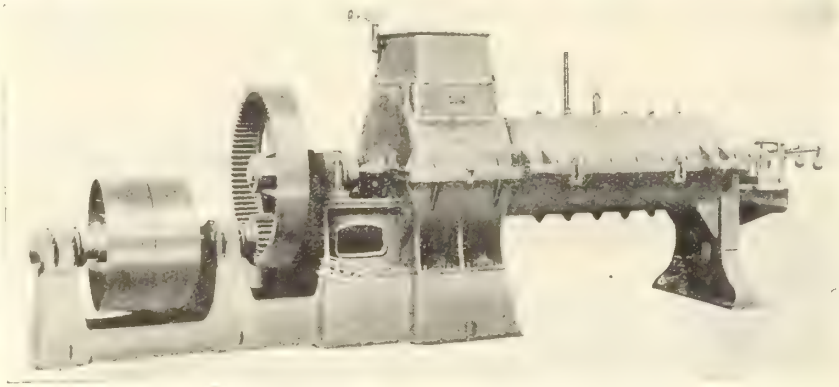
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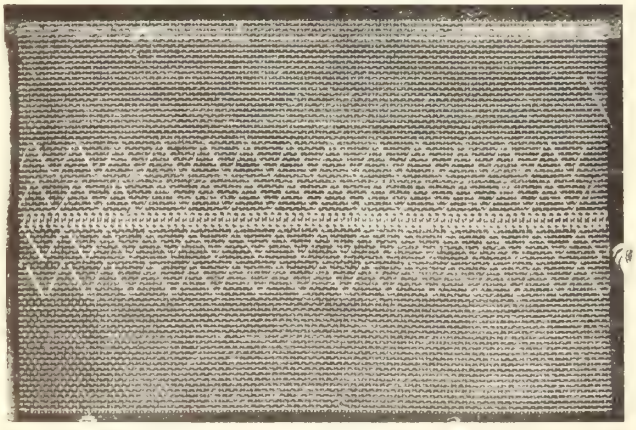
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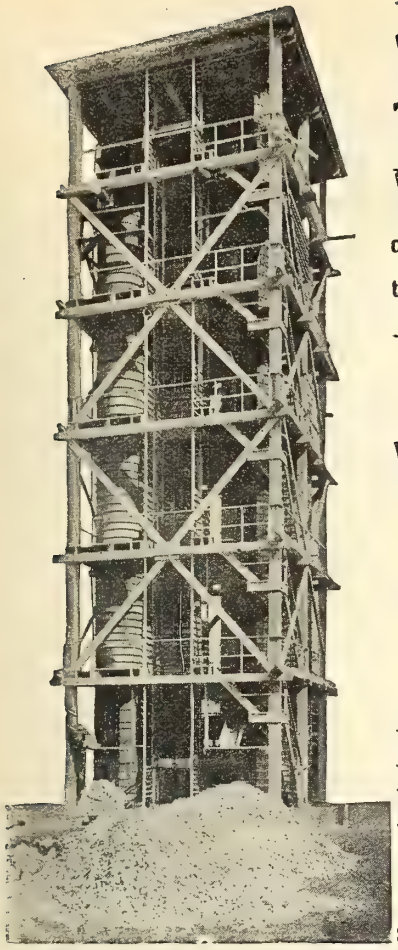
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A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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TABLE OF CONTENTS

Editoral:

We are guilty 475
A strange situation 475
Professional business prophets 476

Special Articles:

Fade-outs of history 477
A new all-electric paper mill 479
Aftermath of Swedish strike 485
Institute items 484

News of the Industry:

Says Lloyds' is biggest paper mill 476
Book manufacturers' officers 478
A.H. Kendall, manager of Chicoutimi Pulp Co. 483
Pulp and paper news 489
Price Bros. earned 2.85 per cent 490
Plans for superintendents' meeting 490
Cruiser nearly drowned 490
Bay Sulphite Co. capital increased 490
Taylor is independent 491
Stratford papers merge 491
High production costs prevent exporting . 491
United States notes 492
Foley not building mills in Alberta 496

Miscellaneous Information:

Baron Byng a booster for books 484
Promotion from within 484
Book announcement 484
Review of recent literature 486
Catalog received 490
What is the industrial cripple worth? 496

The Woodlands Section:

Fires kill freight, Thornton declares 487
Brig-Gen. J. B. White to head cavalry 487
Airplanes to fight forest fires 487
Dr. F. G. Rawling joins U.S.F.P.L. 487
"The Destrustive Distillation of Wood" (Review) 488
Reported on McLachlin timber 488
To renew forests 488

The Markets:

Canadian trade conditions 493
New York Markets 494

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:-: EDITORIAL :-:

WE ARE GUILTY

The editor pleads guilty to a self-imposed charge of overlooking an important point in connection with the protection of our forests. From time to time, in these columns, mention has been made of the necessity for co-operative efforts among the Provincial Departments of Lands and Forests and the Dominion Forestry Branch. In some cases, a fairly satisfactory measure of co-operation between provinces has been agreed upon, and even some co-operation between provinces and an American State government has been planned.

The point that we have overlooked, however is the apparent lack of cordial, complete and organized co operation between the Mines and Forestry Departments of our various governments. Apparently there is less appreciation of the mutual problem of forest protection and the need for co-operative measures in this respect between these different departments of the same governments than there is between the Departments of Forestry in neighboring provinces. It is apparent that the men who are in the woods, both as cruisers and prospectors, are alike in their appreciation of the forest, and the realization of the necessity for its protection. For both of these men, the green forest is essential and the destruction of it by fire is not only likely to take away their living, but also their life. This thought is very well expressed in the following letter which we quote from the Canadian Mining Journal.

The Prospector and Fires

To the Editor,
Canadian Mining Journal.
Sir:

I see by your editorial of April 20th, "The Prospector and Forest Fires," that the lumberman accuses the prospector of starting bush fires, and I note with appreciation that you left very little unsaid in the prospector's defence.

Now, this question of forest fires is one of the most serious in our North Country—serious not only as a great financial loss that affects us all, but serious as a menace to human life. Who, I ask, is more likely to get caught in a bush fire than the man whose work is in the bush, the prospector? What about the lumberman?—you ask. Well, the lumberman about this time is usually safe out of the woods and on the rivers or lakes, driving his winter's cut of logs, or down at the saw-mill, where he has a chance for his life. But the timber cruiser, the surveyor, the geologist, the prospector,—the men who have to camp in the woods when night overtakes them, miles from their canoe or from a lake to give them a chance for their lives —these are the men who know what they are up against. The moment they shoulder their packs and head off into the woods (after submerging their canoe in a creek or sheltered bay, for safety's sake)—you'll agree with me that a bush fire has a *real* meaning to these fellows.

Again, the prospector is often dependent for his daily bread upon that green strip of standing timber—the only kind of timber where he can hope to trap the fisher, marten or beaver that he hunts during the winter to provide his grubstake for next summer's work.

Many more reasons could be advanced to prove that the prospector is *NOT GUILTY* of starting bush fires, but time and space prevent.

In conclusion I will remind the lumberman that the two best fire-rangers he ever had or is likely to have are the two men most vitally interested in the preservation of our forests from fire—the noble Red Man, and Esau, the bona fide prospector.

Gogama, Ont. Tom Saville.

The essential and pressing problem and need just now is the establishment, as rapidly as possible, of the most adequate means of protection of the forest from fire. The basis of this protection is a system of permits, patrol and punishment, accompanied by the most efficient possible education of the public to the value of the forests, and the need for extreme care, when in the woods. These measures can only be made completely effective by the fullest co-operation of all bodies interested in this problem.

A STRANGE SITUATION

The editor is in receipt of a letter from a correspondent in France who deals in woodpulp. Communication with a number of manufacturers of both groundwood and sulphite pulp indicates that there is practically nothing available in either of these lines for export to France. It would appear that the entire production of pulp mills in eastern Canada is required by their own paper mill or by the contract and spot markets for other Canadian mills, and those in the United States or Great Britain. It is known that the product of some of the pulp mills in the east is marketed in France through an English agency. It would seem, however, that with the period of maximum water approaching, consequently the time of maximum production, there would be some surplus available for export, particularly at a time when the market for groundwood is a bit soft. On the other hand, the production and consumption of woodpulp on this continent are very nearly balanced.

It was intimated in news dispatches a short time ago that certain French interests were looking into the possibilities of establishing a pulp mill in New Brunswick. It would seem that some such move as a financial investment in Canada would be the only practical way of a French mill assuring itself of a definite supply of woodpulp. Looking over the mills in the east, there do not appear to be any, as far as we are aware, that are not in some way provided for with a fairly regular outlet for their product. However, if there are any

plants with a surplus of pulp available for export, the Pulp & Paper Magazine will be able to put such a concern in touch with our correspondent.

PROFESSIONAL BUSINESS PROPHETS

The number of vocations that arrogate to themselves the title of "profession" is continually being added to. The latest is probably that of the business prophet. Indeed, at no previous period in the world's history has anything like a tithe existed of the number of people who deem themselves fully qualified, with almost pontifical authority, to forecast business conditions.

This forecasting of future conditions, by means of diagrams or charts of the past, seems not only to have a strong fascination — and also, one imagines, a very profitable one — for those who practise it, but it also hits the taste of the general public. Few things, indeed, are more surprising than the way in which business men, big and small alike, seem ready to pin their faith to predictions based on these diagrams and charts. And this in spite of the fact that the predictions in question have an awkward way of being falsified, more often than they are ratified, by events.

"The worst of great thinkers," once said John Bright, "is that they generally think wrong." The forecaster of business conditions — the diagrammist and chartist—has this, at least, in common with the "great thinkers" of whom Bright spoke—he is generally wrong. Not invariably, of course. Not everyone who essays to "forecast conditions" in the matter of a horse-race loses his money. People have been known, ere now, to break the bank at Monte Carlo. And just as the "plunger" who backs a "certainty", or the gambler with an "infallible system" sometimes guesses right, so, too, does the business "tipster."

But, it may be said, the business forecaster has his data to go on — his records of financial, commercial and industrial conditions in the past. Well, so has the race-course punter his "racing form"; and the "system" of the sportsman who essays to "break the bank" is not infrequently based on some more or less murky lore regarding the ratio of the number of ways in which a particular event may occur to the number of ways in which it may not occur.

The truth of it is that the business forecaster with his diagrams and charts and his learned talk about "cycles" and all the rest of his professional paraphernalia is up against one supreme and, to our thinking, insurmountable difficulty. In predicting that a period of prosperity will be followed by a period of depression he is on sure ground. But, when he attempts to measure with any approximate accuracy the length of any given period of business prosperity or business depression, he encounters the difficulty of which we are thinking. Charts of these business conditions in the past would be helpful enough as a guide to the future if only those who put them forward as such could ensure that the determining factors to confront us in any given future period would be precisely the same as those encountered at a given period in the past. That, of course, they cannot do. And if the cause — that is to say, the determining factors — differ, the effect cannot be predicated to be the same.

This is not to say that existent conditions should not be analyzed or that attention should not be paid to symptoms. But the theory of periodicity in the alternations between prosperous times and times of depression is, and must necessarily be, always liable to be upset by particular forces at work at a particular time. A chart of the past, before the war that was to end all war, for example, can be of little use as a guide to the future to the world in its inflammable state today. For our part we believe in letting the forecaster's charts and diagrams alone, and devoting the time and energy which are required for their study to the work that needs doing now, leaving the future with its "cycles" to take care of itself. —From the Journal of Commerce.

SAYS LLOYDS' IS BIGGEST PAPER MILL

Mr. A. A. Richards of Edward Lloyd, Sittingbourne, England, is on a visit to Canada to investigate the pulp situation from the point of establishing a pulp mill in Canada. Lloyds are very extensive users of pulp, and Mr. Richards is here making inquiries as to the economy and feasibility of manufacturing pulp for use in their own very extensive paper mills. Among other mills, Mr. Richards will visit Chicoutimi and Kenogami.

In discussing the question of exporting Canadian newsprint to the U.K., Mr. Richards expressed the opinion that conditions were unfavorable for Canadian mills entering that market. He pointed out there were considerable difficulties, especially in relation to supplies. Mr. Richards referred, in this connection, to the lack of storage facilities in London as it affects the newspapers. The latter obtain their supplies from hand to mouth, from barges, and have no facilities for carrying large stocks. The peak of the demand is at the week end, for the Sunday papers, and these secure their requirements once a week from barges. Incidentally it might be pointed out that this obstacle to Canadian trade might possibly be overcome by the establishment of distribution warehouses, the Canadian mills keeping these fully supplied.

Mr. Richards stated that the newsprint trade in Great Britain is good. The papers have increased their circulation, and there is a demand for all paper available; at the same time Mr. Richards discouraged the idea of any permanent market for Canadian newsprint being developed in the Old Country, for the reasons given.

Mr. Richards also declared that, in spite of all claims to the contrary, Lloyds' have the largest newsprint mill in the world, producing between 500 and 600 tons per day. The Company is constantly adding to the equipment, and expect to give the Canadian mills a good run for the distinction of maintaining the largest mill in existence.

FADE-OUTS OF HISTORY

By SAMUEL HOPKINS ADAMS

(Reprinted from Collier's, by arrangement)

History should, theoretically, be the easier to write as time goes on. Records multiply. But will some triumphant antiquarian, four housand years hence, who has come upon one of our massive twentieth-century librairies find, neatly arranged and tabulated for him, the multitudinous memorials of the daily life of 1923?

He will not. All that the Americanologist of 6000 A. D. will get when he has hopefully dug down to the archives of our day will be a noseful of dust. The ancients wrote their messages on the eternal rocks. We write ours on the transient trees, pulped and rolled into perishable paper. In a word, our pricipal records of the present day and recent history are already in process of resolving themselves into an inferior grade of sawdust.

News To-day, Sawdust To-morrow

Two years ago I came down from my country place to New York to study the early examples of yellow journalism, now only a quarter of a century old, bringing, as it chanced, a Babylonian document of about 2500 B.C., which had been presented to me and now needed expert reframing. At the New York Public Library I found the yellow journals of the early nineties yellow in the strict chromate sense of the word, and so tattered and fragile that I decline to take the responsibility of handling them except with the assistance of an official. The contrast of condition between these products of yesterday and my relic of 4,500 years past was more than striking; it was grotesque.

Other newspaper records in the same repository were, in varying degrees, approaching the same condition. That experience started me on a course of inquiry concerning a subject which except by a few forethoughtful librarians and a very few progressive newspaper managers, has been totally ignored. The general condition discovered may be summed up in the words of H. M. Lydenberg, the expert of the New York Public Library:

"One hundred years from now, unless preservative measures are taken promptly, the man who goes to a library to consult to-day's news prints will find a mass of sawdust streaked with traces of ink. Newspapers will exist only as museum specimens."

This is true also of great majority of prints commonly regarded as of higher grade, importance, and lasting power than the daily press. But it is the newspaper that is typical.

In the middle eighteen-seventies paper made from ground-up trees began to come into general use. Previous to that our news was committed to rag paper which, aside from fire, water, or other artificial destruction, is practically eternal. The first book printed up on rag paper is as sound today as the day it came off Gutenberg's press nearly five hundred years ago.

The early forms of wood-pulp paper were almost pure cellulose, and this grade, in the opinion of some experts, is almost as enduring as the rag stock. Then a cheaper process, and one (fortunately) involving much less destruction of the forests, was discovered in mechanical instead of chemical wood pulp. Mechanical pulp is made by grinding up the whole tree against a sort of gigantic emery wheel, which leaves not only the cellulose tissue, but also all the highly perishable ligneous material which, in the more expensive processes, is eliminated. From the time of this invention the vast majority of our documents were foredoomed to early extinction. Exposure, light, moisture or heat causes the ligneous tissue to disintegrate. As this represents about 45 per cent of the original pulp, not enough cellulose is left to stand up by itself, and the whole structure of the paper eventually collapses.

Take, for purposes of contrast, the news sheets of the American Revolution and set them beside the newspapers of the World War. The issues of the seventeen-seventies, made of high grade rag stock, are as clear, sound, and legible to-day as when published. One can handle them freely without fear of damaging them. Now take down one of the New York Public Library's bound files of the New York "Times"—and put it back again if you are bent upon research, for it will be valueless to you. Flakes of rotted paper as large as your hand detach themselves, flutter to the floor, and break under the fingers as you essay to restore them. Not a leaf in the volume is intact. It is just a mass of wreckage. Yet the "Times" is published on as high quality of paper as any daily. Of course, in one respect, this is an extreme test: the New York Public Library files are used probably three or four times as much as those of any other library in the country, and the editions which record the opening days of the World War are in special demand. But that is just the point; the records which have the greatest historical interest are the very ones doomed to the earliest dissolution.

At the Congressional Library in Washington it is possible to preserve this class of documents more effectively since there is far less call for them, and they are in better condition when bound. In fact, this repository may be taken as exemplifying the best conditions of preservation. Selecting, at random, specimens from its files, I found that the New York "World" of 1895 was several tones browner (indicating the degeneration of the ligneous tissue in the paper) and much more brittled than the tissue of 1880, which was a better grade of pulp and which, in turn, was far below the standard of the rag stock of 1870. The 1900 volumes were about as bad as 1896, and 1915 was already distinctly inferior to 1880, which is, in color and general appearance, about equal to a current issue.

None of these papers, except the 1870, is to be compared for upstanding condition to the Boston "Gazette" of 1801. From the general state of these carefully maintained specimens, it would appear that the "expectation of life" of even the low-grade mechanical wood pulp might be considerably prolonged under conditions of withdrawal from public use. But here enters another consideration. The life of a news-

paper volume is measured by the life of its binding. For, so fragile do the sheets become in a few years that they cannot withstand the process of rebinding, but immediately tear out where the threads are run through, thus rendering them impracticable for consumption.

Records Die with Their Generation

For those who hold that the daily press is inessential to the historian, and that future history can be comprehensively written from other documents — a false promise, I believe, since, as the world grows more democratic in control, what the mass of people thinks and does and aspires to grows constantly more important in the historical sense — the prospect is still far from reassuring. Other documents, more specifically destined to longer life, are threatened about equally. The Congressional Record, which is certainly of prime historical value, is little superior to ordinary newsprint in quality and durability, and will outlast it only a few short years, if at all. Today's Gentleman from Indiana, whose thrilling eloquence gets itself into official type under the "leave-to-print" formula, enjoys a prospect of immortality painfully less than his dead-and-gone predecessor of half a century ago whose political hopes and passions were confided to a sound rag paper. Already the Records of the nineties show evidences of discolorations and flimsiness. It may well prove that their term of life will end with the necessity of rebinding them. Few, if any, of our State legislative prints are any better.

Of equal importance in another field are the scientific publications of the Government, some of which appear on good quality of sulphite pulp, some on newsprint. That the bulletins for the immediate and temporary information of the farmers, for example, should shortly fade away is no loss. But suppose that, seventy-five years from now, there should come a plague of the seventeen-year locust (which isn't a true locust, but will serve for illustration). It might conceivably be of the highest importance for the entomologist of that day to trace the genealogy of the devourers. Yet he might find nothing more valuable to his research than a mess of feathery pulp.

Practically all of our fiction, and much of our more serious book publishing, is now done on "second-hand" paper, repulped and cleansed from news print. Its expectation of life is no greater than that of the original stock; probably less. In an age which deems itself overrich in documentation it is surely a curious reflection that the baby born this year may well outlive all the public prints and most of the deathless literature of his little day!

If the current history of our time is to endure, except by the process of repetition and handing on from book to book, it must be through one of two devices. Special editions of newspapers and periodicals may be issued on rag stock. From all that can be determined, this would last as long as parchment or papyrus; that is, an indefinite number of centuries. All of the fifteenth-century books now known to be in existence are in excellent condition. As for the print itself, that is practically imperishable; printer's ink yields only to the strongest acids. The experiment of getting out a special library edition tried in England by the London "Times," not on rag stock but on paper of good quality, and is still being continued, though at a loss.

The other method of preservation is the one now retained in use at the New York Public Library, after several others had been tried and discarded. The newspaper to be treated is divided into single leaves. The separate leaf is then covered on each side with a handmade vegetable fiber of the kind known as Japanese paper, thin, light, transparent, and highly durable, the process being completed with rice paste. The cost is about $45 per monthly volume; $540 per year for each daily. I have seen a file of 1895 which had been carefully secluded and, twenty years later, was covered with the Japanese paper. It is now in perfect condition very slightly reduced in legibility by the necessity of reading through the covering, and can be rebound indefinitely, as the coating paper will not degenerate. Specimens of the same date, uncoated, are now flaking to bits. Any attempt at rebinding them would be futile; the edges would tear away at once.

Since 1916 the "World" has borne the expense of thus preserving a file at the Public Library, and later the "Times," the "American," and the "Herald" gave a similar public-spirited guaranty. Issues thus protected have been exposed to a week's direct sunlight in the open air and show no deterioration. Similar exposure of last week's paper would burn much of the resistant quality out of it. With the exception of these few dailies, there are no prints of this class being scientifically preserved.

The World War daily history is disintegrating under our eyes. And there are no funds available for saving all this material for posterity. Here, surely, is the opportunity for some forethoughtful and public-spirited philanthropist of to-day or posthumous benefactor of to-morrow to become, at less than the founding cost of a single library, if not a maker of history, then — perhaps with far more enduring benefit — its foremost modern preserver.

BOOK PAPER MANUFACTURERS

The Book Paper Manufacturers Association at its meeting on Monday voted to dissolve and to turn over all its records to the so-called "Book Paper Converters Association." The change was decided upon in view of the fact that the Book Paper Manufacturers Association represented only about 40 percent of the industry, while the converters' association represents nearly 90 percent. The change is more or less of a change of name to make the organization more specific, as most of the mills in the old organization will continue in the newly formed association has not yet been decided, but details or organization will be taken up at another meeting to be held May 3, either in the west or the east. Until that meeting the satittical work will be continued, in order not to break the continuity of production and other records by E. H. Naylor, who has been secretary of the old Book Paper Manufacturers Association.

Alex W. Gilman of the Allied Mills of Kalamazoo is president of the new organization, but other officers have not been selected.

Students of the Oneonda, N. Y. High School have planned to plant 10,000 pine trees seedlings as their part of a ten-year program for reforesting the watershed of Oneonda Creek. The trees will be provided by the State Conservation Commission and will be set out under directions of its representatives.

A NEW ALL-ELECTRIC PAPER MILL

By A. H. WHITE * and R. H. ROGERS †

(Continue from last issue)

As before stated, the mill product — "news" — is composed of approximately 25 per cent chemical pulp and 75 per cent. mechanical pulp; hence the logs leave the storage pile by two routes to meet finally in the mixing system. The sulphite process produces about 1,200 lb. of air-dry sulphite fiber per cord of wood. It may be noted that being floated down the river, tumbled through the barkers and then onto and out of the storage piles so thoroughly mixes the spruce and balsam logs that there is practically no variation in the quality of product, actual checks at the conveyors over several hours having shown that the proportions vary less than 2 per cent.

In the sulphite process the cleanest logs are selected at transfer points in the conveyor system and sent to the chipper building. Here they may be washed in a drum similar to the drum barkers but shorter; then, if knots or discolored spots remain, such logs receive special treatment on a knife barker.

The thoroughly cleaned logs now go to the chippers, of which there are two, each taking its quota. The chipper is a heavy 7-ft. disk carrying three radial blades set as in a plane. The logs by ones, twos or threes, according to size, are fed down a chute at an angle of 45 deg. with the disk, and they are rapidly reduced to chips the size of "small change."

Conveyors take these chips to the tops of large inclined oscillating screens which allow the suitable sizes to fall through onto a conveyor, while the larger pieces slide over a low dam down a chute to the rechipper or "hog" for resizing, whence they return to the screens. Fine particles of the nature of sawdust are blown out and go to the refuse-burning boiler house. The acceptable chips cross over to the digester house on a belt conveyor.

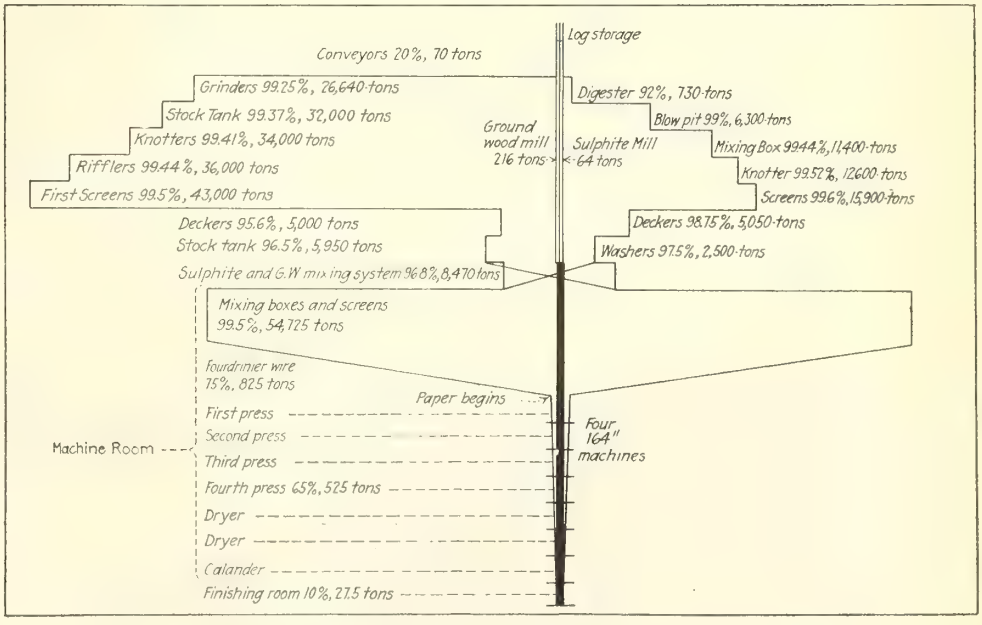
The washing drum and chippers in Table IV are of the wound-rotor type on account of the heavy starting duty. The drum may have to start up with a heavy load of logs in place, and the chippers are characterized by their flywheel effect, which imposes a heavy starting duty.

The chip bin is a huge steel-supported wooden trough just above the digester-charging floor with slide-controlled openings directly over the digesters. By swinging large funnels around on hand cranes, the chips can be discharged into the two digesters, each taking about twenty cords in twenty-five minutes for a feeding.

The "acid" building alongside is arranged for preparing and storing quantities of bisulphite of lime. This is made by first melting and then burning sulphur in rotary furnaces and combustion chambers. The resulting sulphur-dioxide gas is water-cooled and forced upward through high towers that are packed with limestone. A supply of water trickles down through the limestone and combines with the gas to form the bisulphite of lime, which is recirculated through the towers before being stored in huge vats.

The digesters are vertical steel tanks with conical tops and bottoms and lined with acid-resisting bricks and mortar. After being filled with chips about 25,000 gal. of bisulphite of lime is pumped in, taking twenty minutes.

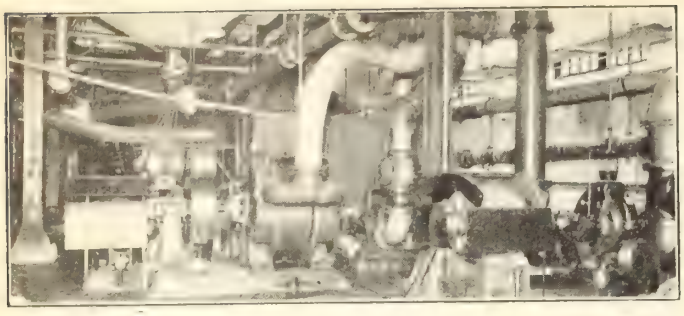
Steam is admitted at the bottom, and the pressure gradually mounts to 70 lb., with a resulting temperature of 316 deg. F. The steam flow practically stops after two hours, but the "cook" is continued for over five hours, taking about 250 boiler-horsepower-hours per ton of air-dry pulp. The process of selective digestion lasts about eight hours and is for the specific purpose of removing the ligneous and resinous binders without harming the cellulose ($C_9H_{10}O_5$) fibers that go into the paper. At the end of the "cook" the contents of the digester are blown into a covered concrete "blow pit," which has a perforated bottom through which the waste liquor drains off to the sewer. The steam and gas fumes pass off through high baffled towers called vomit stacks, which are designed to prevent the escape of pulp. The pulp is now thoroughly washed in the blow pits for several hours until practically nothing remains but the silky unbroken fibers of cellulose.



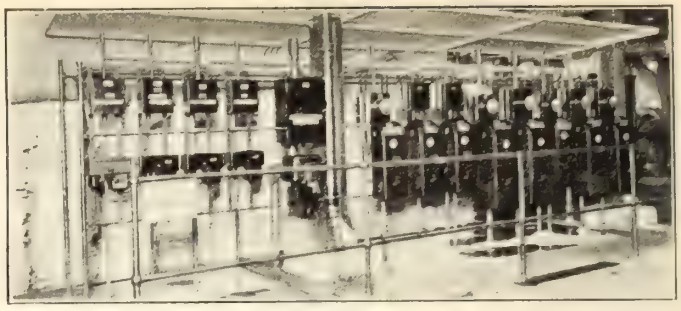
Schematic Outline of the Production Process From Logs to Paper

* Chief engineer the International Paper Company.

† Power and Mining Department, General Electric Company.



Motor-Driven Vacuum and Centrifugal Pumps are Required



Compensators and Switches for Controlling Paper Machine Auxiliaries

When the stock leaves the digesters it is 92 per cent water, and it becomes 99 per cent water while being washed in the blow pits. It now goes to a 35,000-gal. stock tank, which stores up enough to convert the intermittent discharges from the digesters into a continuous process beyond the tank. Horizontal-shaft agitators in this tank keep the contents from settling.

From the tank a steady flow goes through a mixing box, which by the addition of white water from an extracting process further along doubles the volume. A rotary screen of the type called a knotter extracts the coarser clots and fiber bundles, and a still further refinement takes place in the improved rotary meshed-drum "first" screens, which pass only the individual fibers through very narrow slits. The rejected material from the knotters and first screens passes through a "second" screen, which returns the valuable portion to the main stream back of the first screens and sends the coarser parts to the wrapping-paper department.

The stock now cascades down five steep meshed thickeners into tanks in which revolve partly submerged screen thickener drums. The excess water falls through the inclined screens or passes to the inside of the drums, while the pulp adhering to the outside of the drums falls over dams and flows to the soft-stock tank below. The thickeners reduce the water flow from 2,900 g.p.m. to about 400 g.p.m., which leaves the stock about the consistency of thin porridge. The extracted white water goes to a tank, to be worked back into the system in various ways. The screens and thickeners are in a belted group drive with other miscellaneous machinery.

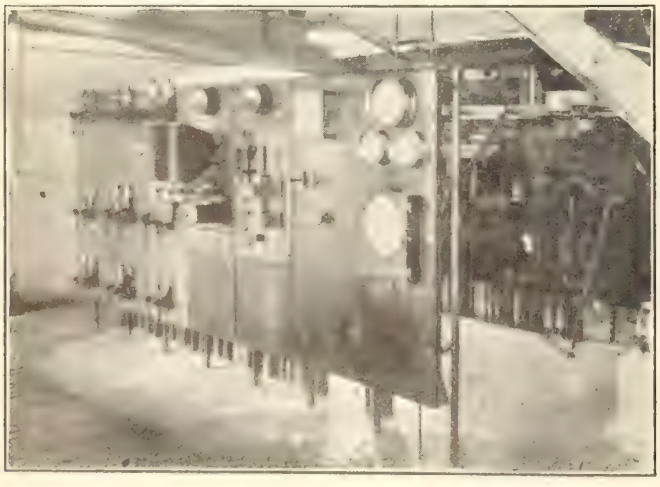
A sulphite soft-stock tank, with a capacity of 45,000 gal., is equipped with a horizontal-shaft agitator to prevent separation. A small addition to this stock comes from two inclined "save-alls" which give the white-water tank overflow a last screening before it goes to the sewer.

It will now be expedient to bare the sulphite pulp at this point in order to bring the ground wood pulp up to a similar condition prior to mixing the two.

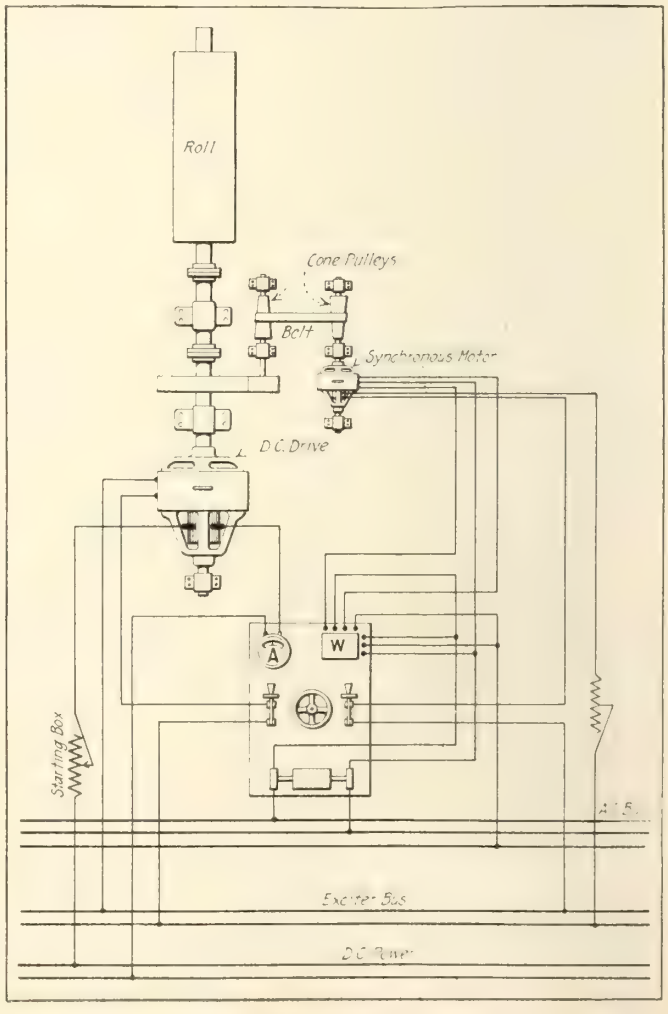
The Making of Ground-Wood Pulp

Interest in the ground-wood department centers about the grinders, for here is the heaviest draft on electric power and the greatest material transformation, all carried on with relentless energy and yet with just that skill and delicacy that produce unvaryingly the balance between quality and quantity which goes so far to uphold the mill's production record.

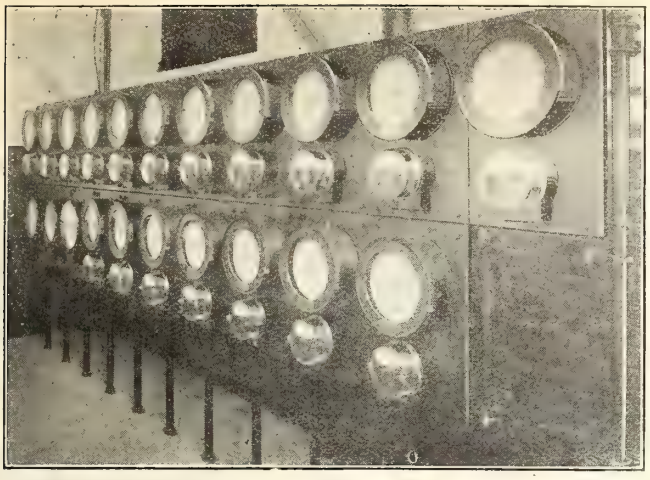
Six General Electric 2,400-hp., 2,200-volt synchro-



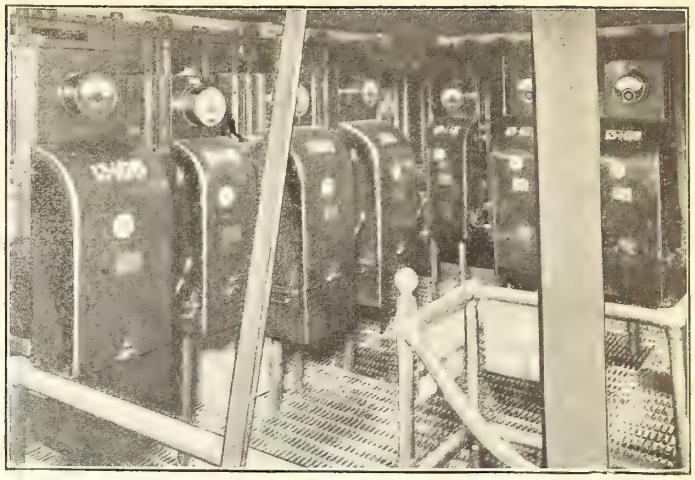
Front and Rear of Control Panels for Paper Machine Turbo-Generator Sets



A Single Unit Schematic Diagram for Sectionalized Drive on Paper Machine



Eighteen Flow Meters are Electrically Relayed from Eighteen Departments Using Steam



Compensators on Gallery over Ground-Wood Pump Pit to Control Seven Pumps

nous motors, backed by their switchboards, oil-switch cells, starting compensators and exciter motor-generator sets, form the most imposing array of power in the mill.

These synchronous motors are designed to allow for a large leading power factor even at fractional loads. As their load far outweighs all the induction motors combined, the power factor for the mill is exceptionally high and is under control through field regulation of the synchronous motors.

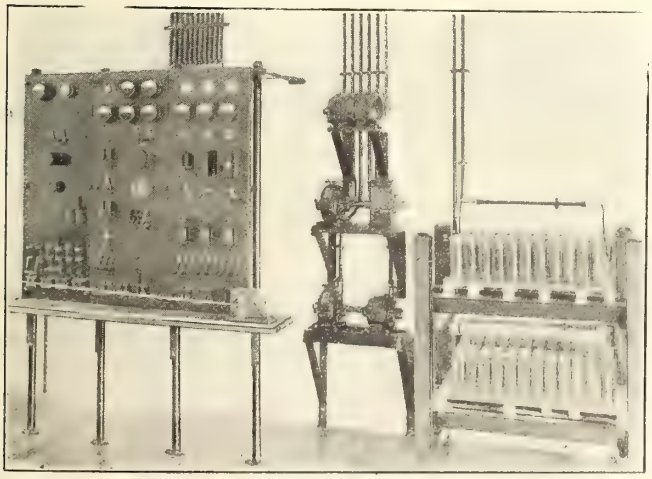
Wood grinding furnishes an ideal load for synchronous motors as the grinders have light starting load when the pressure is relieved. They have a constant load characteristic regulated by an automatic device, and the total load is so great that the power factor for the whole plant is kept at unity. It is of interest to note that the induction motor load alone has a power factor of 72 per cent.

These synchronous motors are started by reduced voltage-tap compensators, and the power factor is controlled on the individual motors by their field rheostats. The motors are designed for 72 per cent leading power factor and 96.2 per cent efficiency at full load.

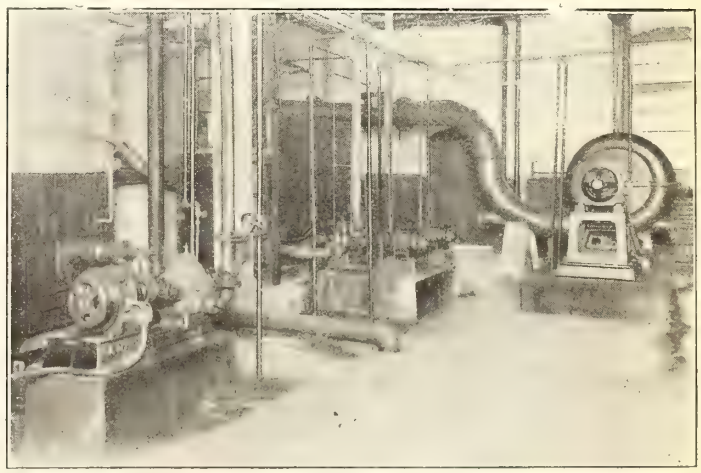
Each 2,400-hp. motor is direct-connected to the end of a shaft that carries two grindstones 60 in. in diameter by 54-in. face, thus making twelve stones in all. The seventh set, which will make fourteen stones, is being installed.

The grinders are of the Waterous magazine type—i.e., the wood is fed into vertical chambers that reach to the charging floor, where they are kept filled from wood bins that are in turn kept replenished by the conveyer system. The 4-ft. logs are laid in the magazine parallel to the shaft, making two compact stacks per stone in the magazines with the stone between them at the bottom. The logs that lie alongside the stone on either side are forced against the stone by hydraulic pistons until they are ground away. When the pistons have completed their strokes, they automatically withdraw, allowing more logs to fall into the vacant spaces, when the relentless forward travel of the pistons begins again. The withdrawal of the pistons is accomplished by the low-pressure 50-lb. water system, while the grinding pressure is applied by the 190-lb. water pressure, using, however, only about 150 lb. in service.

Without water the wood would burn and the stones would burst from heat; therefore some 6,000 gal. of white water is flushed over the twelve stones, serving to bring the ground wood away as pulp which is over 99 per cent water. Even so, the heat generated evolves a great amount of steam. This, however, is ejected by an ingenious system which leaves the department unusually clear. In the side of each magazine is a toothed



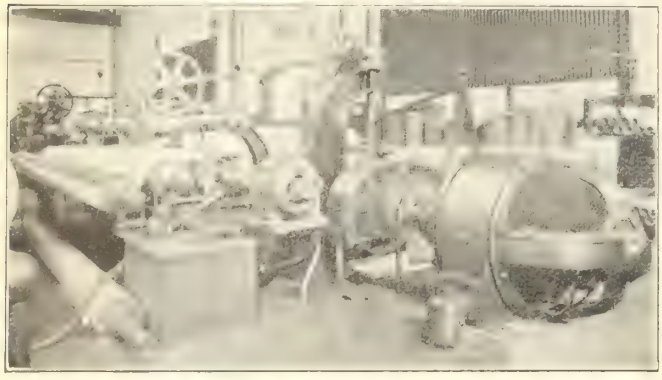
A 25-Volt Storage Battery System Energizes about 4,800 Circuits for Telephones, Fire Alarms, Watchmen's Stations, Etc.



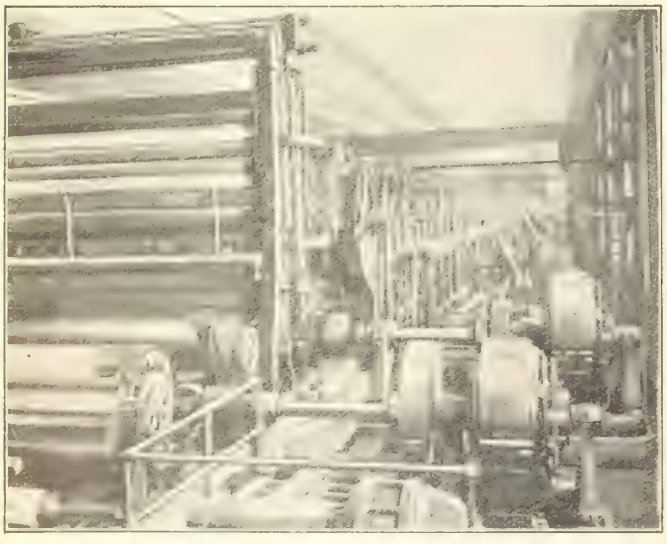
Auxiliaries in the Sulphite Room Must Have Lead Fittings and Acid-Proof Construction to Prevent their Deterioration

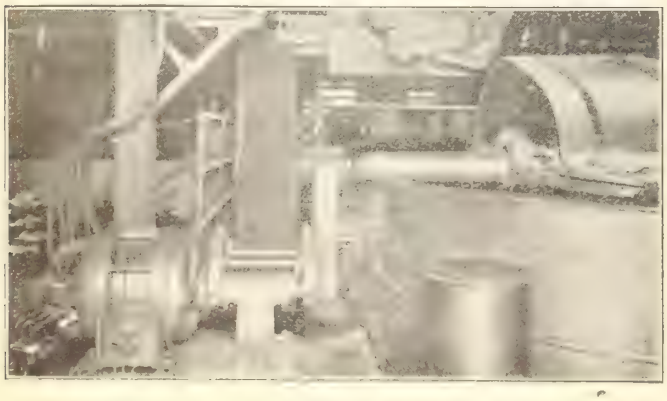
wheel which is turned as the wood sinks toward the stone, and registers the cords of wood ground.

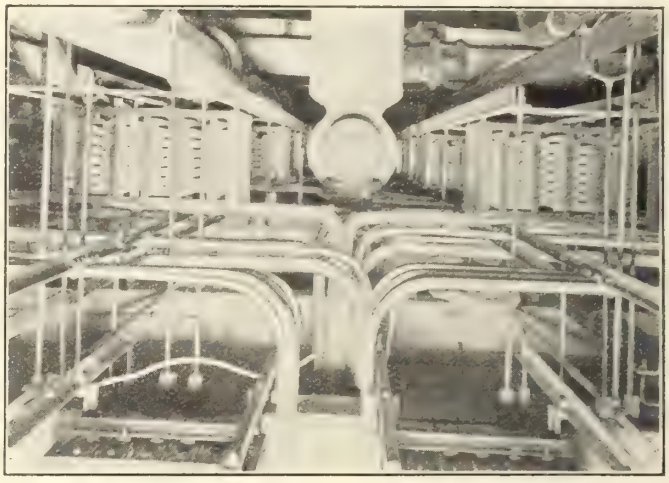
Provision is made for burring the stones at regular intervals by means of a built in hydraulic burring lathe, without interfering with production, and a light burring at three-hour intervals is said to give very uniform results. Each stone, consuming about 900 hp., grinds 17 tons of air-dry pulp per twenty-four-hour day, and the pulp is of such high quality that refining processes usually resorted to are omitted in this mill.











Resistors and Conduits Under Machine Room Floor. Dryer Jackets at Right and Left

TABLE III—ELECTRIC MOTOR DRIVES IN PUMP HOUSE

(Total connected load, 1,862.5 h.p.; 550 volts, alternating current.)

Two 10-in., 2,000-g.p.m., 120-lb.-head fire pumps:	
Direct; two 200-h.p., 1,200-r.p.m., squirrel-cage	G. E. *
Two 20-in. vertical 10,000-g.p.m., 35-ft.-head pumps, river to filters:	
Direct; two 125-h.p., 514-r.p.m., squirrel-cage.	G. E.
One 16-in. vertical 6,000-g.p.m., 35-ft.-head pump, river to filters:	
Direct; one 75-h.p., 720-r.p.m., squirrel-cage.	G. E.
One 10-in. 1,800-g.p.m., 140-ft.-head pump, river to mill:	
Direct; one 100-h.p., 1,800-r.p.m., squirrel-cage.	G. E.
Two 18-in. 10,000-g.p.m., 120-ft.-head pumps, filters to mill:	
Direct; two 400-h.p., 1,200-r.p.m., wound rotor	G. E.
One 10-in. 4,000-g.p.m., 120-ft.-head pump, filters to mill:	
Direct; one 200-h.p., 1,800-r.p.m., squirrel-cage.	G. E.
One filter washer and air pump:	
Direct and chain; one 30-h.p., 900-r.p.m., squirrel-cage.	G. E.
Screen washer:	
Gears; one 7½-h.p., 1,140-r.p.m., squirrel-cage.	C. W. †

*General Electric. †Canadian Westinghouse.

TABLE IV—ELECTRIC MOTOR DRIVES IN CHIPPER BUILDING

(Total connected load, 453 h.p.; 550 volts alternating current.)

Washing drum:	
Belts and gears; one 50-h.p., 860-r.p.m., wound rotor.	C. W.*
Knife barker:	
Belts; one 50-h.p., 860-r.p.m., squirrel-cage.	C. W.
Conveyor to chippers:	
Gears; one 25-h.p., 860-r.p.m., squirrel-cage.	C. W.
Two chippers:	
Belts; two 125-h.p., 690-r.p.m., wound rotor.	C. W.
Two chipper screens:	
Belts and gears; one 50-h.p., 860-r.p.m., squirrel-cage.	C. W.

Many Motors Operate the Paper Machine

Upper view: An alternating-current motor drives the slitter and a direct-current motor with speed control is used on the rewinder.

Second view: Drum controllers and panel housings for wet end of a paper machine.

Third view: Each of the nine sections of the paper machine has its own motor drive.

Lower view: Motor-driven broke beater for two paper machines using Lenix belt drive.

(to be continued)

Conveying Equipment and Water Pumping Station

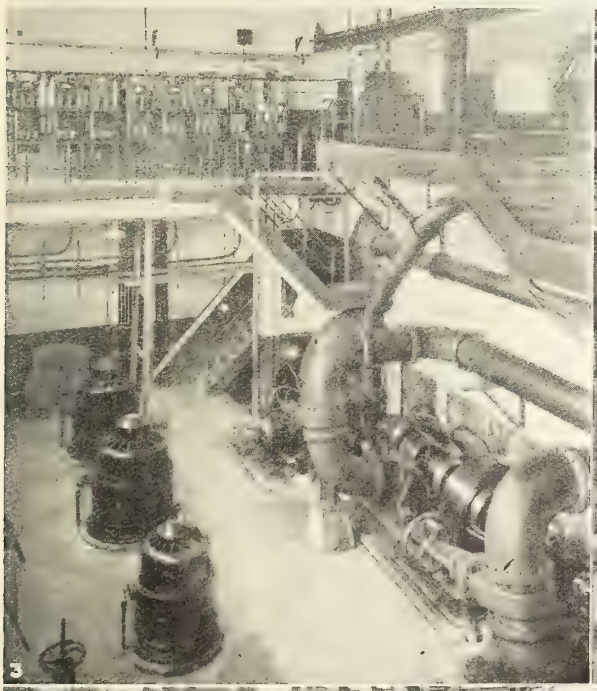
No. 1. There are over 3,000 ft. of outside conveyors of the cable type. This conveyor comes from the wood preparing plant. In the distance is a stacker.

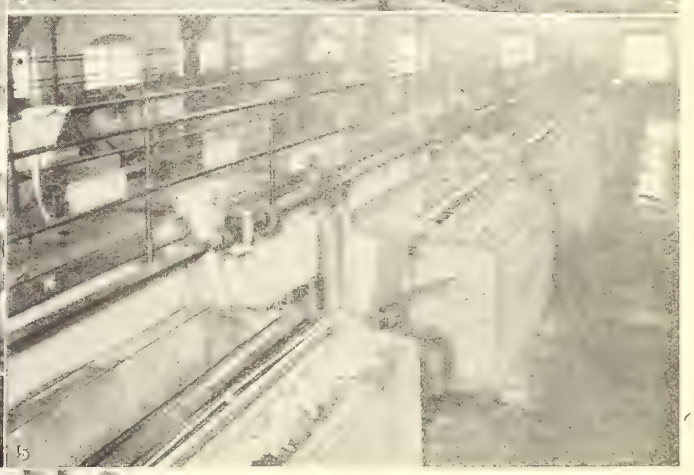
No. 2. This "Jack Ladder" conveyor handles 16,000 logs per day from the river to the saws.

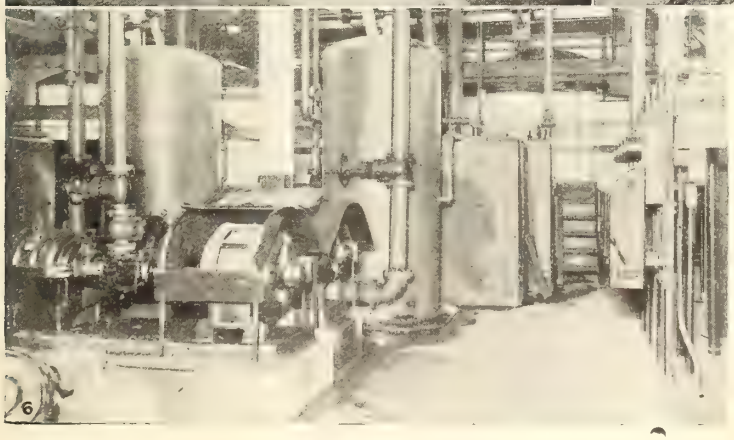












No. 3. In a pump pit below the river level motor-driven pumps furnish water for the filter plant and mill. The control equipment is located above high water.

No. 4. A portable conveyor driven by a 15-h.p. motor reclaims logs from storage and takes them to the permanent conveyor for delivery to chipper and grinder buildings.

No. 5. Group of five deckers, chain-driven from a line shaft. Six of these groups of pulp thickeners are in the ground wood screen room.

No. 6. One of two pairs of high and low pressure pumps for the grinder hydraulic jacks. Compensators are shown at right.

INSTITUTE ITEMS

BARON BYNG A BOOSTER FOR BOOKS

The importance of the study of good books and the acquisition of ample theoretical knowledge, both regarding things pertaining to one's profession or business and things pertaining to life in general, was stressed by Lord Byng, Governor-General of Canada, in his address before the Young Men's Canadian Club, and reported as follows by The Star.

Baron Byng addressed his remarks particularly to the young men whose ambition it was to become a hard practical business or professional man, and quoting extensively from classic writers ranging from the apocryphal scriptures and the works of Marcus Aurelius to such comparatively modern philosophers as John Ruskin. He demonstrated that no young man could hope to become really practical if he did not give the full share of attention to the theoretical side of his business.

There had been recently a long orgy of addresses on the vexed question of education, His Lordship said, yet he felt that there was nothing that he could touch on so effec tively as a phase of that same question.

He supposed that any young man, asked today what he wanted to be, would reply, "I want to become a good, hard, practical man."

If the word "practical" meant a man of skill and great ability, it was a high ideal, but often people felt that to be practical they had to discard theory altogether. The flaw in that line of argument was that theory was only other people's practice.

Many of the world's most practical men had put the outcome of their practice into writing. Therefore, it was a mistake to think that in order to become practical men they could afford to dispense with the theoretical learning to be got from books. Time was money, but so was health and knowledge.

Lectures at Canadian clubs were examples of the hand ing out of other men's knowledge and experience in tabloid form. But no amount of club lectures could ever replace the knowledge gained from the study of good books. They should not fail therefore to set aside a part of their day for the reading of good books.

Play the Game

The playing of games also had its important place in the life of the practical business man. But it should be playing, not watching. "I would sooner play any game, and I play them all, and all badly, than watch internationals play."

He felt it did him more good to play badly himself than to watch others play well.

"Let us all try as much as we can to play as many of them as we can. Then read good books. This is the highway to become a hard, practical business man, because your day will be full, your health and knowledge will be developed which is the way to become hard, practical business men."

There were busy people and lazy people in every walk of life. Ruskin spoke of the idle poor and the idle rich, busy poor and busy rich, and how the busy of one class viewed the idle of the other class and condemned the whole class accordingly. There was a working class amongst both rich and poor, and they were strong and happy because they were workers. His Lordship also quoted the Apocrypha on the same theme.

In conclusion, His Lordship expressed his pleasure at being with the young men and his whole-hearted desire to identify himself with the effort of the young men of Canada for their own and their country's betterment. He urged on them a careful consideration of the warning given to him in his youth by one of his monitors, "if you try too much to be theoretically practical, you may end up by being practically theoretical." They should strenuously avoid the temptation to so strain after the idea of being practical as to bring about in practice the very opposite result.

PROMOTION FROM WITHIN

How his company has developed a system of "pro motion from within" was described to the Technical Association of the Pulp and Paper Industry on Wednesday by Harry P. Carruth, general manager of the Mead Pulp and Paper Company of Chillicothe, O. He said that the first requirement in developing a system of promotions was an analysis of the duties and relative responsibility of the men in every job in the mill. Each man's worth, as determined by his position, the number of men under him if any, the value to the company of his efficiency, or the damage possible through inefficiency, is arbitrarily determined, and a wage rating assigned in accordance with his value, this analysis going through the entire plant.

After the analysis is made, men throughout the mill are allowed to apply for examination in their particular branches, these examinations being oral and practical. The man who passes the examination with sufficiently high marks is then given an official rating as being a man of a certain title, such as machine tender, beaterman, etc., and is then available for a try-out in the next higher position when there is a vacancy. After try-out, he can take examination and be officially given the higher rating which he has earned.

The results Mr. Carruth said, were manifold, in increasing efficiency, avoiding labor turnover, and putting a personal interest in the job on the part of every man. The men are allowed to purchase stock in the company.

BOOK ANNOUNCEMENT

An announcement with table of contents and a portion of the index has been received for a book entitled "Intelligence Measurement" by S. C. Kohs. Besides an introduction and a preface by Dr.L.M. Terman, there are 305 pages in the book, including 50 graphs and 90 tables. The book is divided into three parts; the first covering the subject of the Physicology of Analysis and Synthesis. The second, the Block Design test, and the third is an appendix containing tables and typical records. The major part of the book is taken up with an explanation of the Block Design Test as a measure of the intelligence of an individual.

From the contents, it would appear that this book would not only be interesting but quite valuable to a person whose duty it is to estimate the mental capacity of individuals in connection with promotion or the assignment of responsibility.

Pulpwood operations in Quebec are faced with a serious shortage of freight cars. Dealers are forecasting high prices for wood, and bonuses are reported now for prompt delivery.

Aftermath of Swedish Strike

By O. G. MARELL

The Swedish pulp mill strike and lockout is settled. These welcome tidings were received during the First Paper Industries Exposition in New York during the week of April 9th. Exactly on what basis the settlement was made is not known at this writing, but cable messages state that a complete arbitration of the differences between the pulp mill workers and the mill owners has been concluded.

While this is most encouraging, the fact remains that the shut-down of the Swedish pulp mills already has had a far-reaching effect in the markets abroad as well as in America. Conservatives estimates put to the Swedish wood pulp production loss at about 200,000 tons, but this figure is generally considered too low. The lockout went into effect on February 1st., and approximately ten weeks of almost complete stagnation in production elapsed before the settlement was reached. The total normal production of the mills affected by the lockout is about 24,800 long tons, whereof 15,000 tons sulphite, 4,800 tons sulphate, and 5,000 tons mechanical pulp. Ten weeks production totals, accordingly, 248,000 long tons, or approximately 278,000 short tons, which is the amount of pulps of all kinds taken away from the world's market through the lockout since February 1st. Adding to this another 100,000 tons loss through the stikes during January we arrive at a total curtailment of 378,000 tons from Sweden's, production for the current year.

Immediately upon receipt of the news of the pulp strike in Sweden, the market, which already was in an upward movement, became still firmer, and this strong undercurrent increased steadily as the situation in Sweden became more and more aggrevated. Strong unbleached sulphite has during the last four months advanced from around $2.80 per 100 lbs., ex-dock, to $3.50, and Kraft is to-day selling at $3.35 to $3.40, with some small lot quotations as high as $3.50.

Taking the situation as it stands to-day, without consideration of what other factors may be brought into play during the balance of the year, the price trend is decidedly upward. The paper consumption is enormous, and the general prosperity of the whole country may be taken as an indicator that there will be no slackening in the demand for some time to come.

But there are also other factors that must be taken into consideration. Following in the wake of the Swedish lockout, a strike in the Norwegian pulp mills is threatening. In authoritative quarters it is stated that the Norwegian labor agreement does not expire before August 1st, as far as the pulp industry is concerned, but there are rumors that certain forces are working for a general strike in Norway to go into effect on May 1st. If this strike element should be successful, the pulp industry would no doubt also be affected, and an additional tonnage of wood pulp be taken away from the market.

Furthermore, reports from England indicate that there is a shortage in that country of some 100,000 tons of esparto grass, used by English papermakers in book paper. This shortage would have to be made up with easy bleaching sulphate, which would be an added strain on the already depleted resources.

A summing up of the situation must necessarily lead to the conclusion that a shortage and a serious shortage is imminent. For how long, no-one can foretell with any degree of exactness. But the papermaker is not particularly concerned about what is going to happen next year, or the year after that. The British long-term contract has never found adherents on this side, and the British themselves have abandoned the pre-war time contracts which they found anything but practical during the war years.

The question at this moment is what is going to happen during the balance of the current year. Is it wise to buy now sufficiently to cover for some months to come, or is all this talk about shortage and higher prices only a ruse on the part of the pulp mills and merchants who are eager to turn the Swedish labor troubles into gold for themselves?

It is doubtful that there can be more that one answer. But at the same time one should not forget that there is no cause for anticipating a repetition of 1920. The present year is not slated to be a year of panics, either in the pulp industry or in other industries. The lesson of three years ago is not likely to have been forgotten so soon by American men of business and finance. One thing, however, that could bring about something like a near-panic in the wood pulp industry would be the inauguration of a prolonged watchful-waiting policy on the part of the buyers. And it seems to be a fact that, in an upward market, the paper makers are, by virtue of custom or over-cautiousness, wont to "sit tight", until their stocks of raw materials run low, or the market all of a sudden starts to run amuck due to an aggravated shortage of pulp. Fortunately, this watchful-waiting policy is less pronounced to-day than a few years ago. And again we can look to the lesson of 1920 for the explanation. Paper makers have generally pretty well covered their needs of pulp by contracts. But there are many who have held off, buying a little with every price advance, expecting, or hoping that every level would mark the turning point.

There is a pronounced need that some logical and practical measure be taken to balance the present cycle of favorable development so as to eliminate the possibility of inflation and subsequent deflation. The best solution would undoubtedly be a sound buying policy on the part of the consumers, free from heavy speculation—a policy of buying in quantities that would insure adequate supply at a reasonable price average, and throw into the discard the drib-drab buying policy as well as these of overstocking.

Prosperity is welcome, but inflated prices are a curse which may well be avoided by a sane buying policy.

A. H. KENDALL

Manager Chicoutimi Pulp Co.

A. H. Kendall, master mechanic of Quebec district, Canadian Pacific Railway, has resigned from this company's service, having been appointed manager of the Chicoutimi Pulp Company, the Saguenay Light & Power Company and the Roberval & Saguenay Railway Company. He was banquetted at the Place Viger Hotel and presented with a handsome case of pipes by the officers of the Quebec district locomotive and power departments.

Technical Section

REVIEW OF RECENT LITERATURE

E — Sulphite Manufacturing

E-5. Process for Producing a High-Percentage Sulphite Pulp. E. Bronnert. Ger. patent 363,997. **Wochbl. Papierfobr.** 54, 396 (Feb. 10, 1923). The wood is given a preliminary cooking treatment with dilute sulphuric acid, about 1 per cent, under low pressure; customary cooking with bisulphite liquor follows.—J. L. P.

F—Alkaline Processes of Pulp Manufacture and Equipment

F-2. Process for Recovering Non-Cellulose Material in Waste Liquor: A. R. DeVains. Fr. patent 547,898. The organic matter is precipitated from the liquor by treatment with a halogen or with an acid. The precipitate is removed by filtration, and is either incinerated, subjected to destructive distillation, or gasified in a gas producer.—A. P.-C.

F-0. New Methods for the Disinfection and Refining of Plant Fibers. P. Waentig. **Wochbl. Papierfabr.** 54, 23-25 (Jan. 6, 1923). **Papierfabr.** 21, 49 (Jan. 28, 1923). A review of war-time and post-war developments in the sulphite and soda cooking processes, with brief statements in many cases as to their merits. Mention is made of the utilization of hemp, straw, and reeds for the manufacture of paper. Chlorine water and chlorine hydrate are less destructive in their action on fibers than chlorine, as in the Cataldi process. The use of carbon dioxide in a recently developed combined acid-alkaline bleaching process is briefly discussed.—J. L. P.

F-0. Production of Pulp by Means of Chlorine. B. Cataldi, assigner to A. Pomilio. Can. patent 226,002, Nov. 14, 1922. The material is subjected to the action of an alkaline liquor under pressure (first hydraulic and then steam pressure). It is transferred to an acid-resisting digester and then subjected to alternate treatments with chlorine gas and washings with water to cool the mass and remove the hydrochloric acid formed by the action of the chlorine. These treatments are continued until the temperature of the mass remains constant. The fibers are washed with clean water, subjected to a mild alkaline treatment at atmospheric pressure, and finally worked up as usual.—A. P.-C.

F — Refining & Treatment of Pulp

G-0. Refining of Commercial Wood Pulp. Ger. patent 302,523. **Wochbl. Papierfabr.** 54, 322 (Feb. 3, 1923). For the production of special papers and articles, wood pulp, especially sulphite pulp, is treated with caustic alkalies or sulphur-containing alkalies under pressure and simultaneous mechanical working in the absence of oxidizing gases and steam; subsequent treatment is given to prevent precipitation of dissolved substances on the fiber.

Ger. patent 302,524. (Addition to preceding patent). The pulp is prepared for the same purpose in a mechanical way, without chemicals, at a high density and temperature.—J. L. P.

K — Paper Making Process Equipment and Refining

K-4. Removal of Rosin, Fat. Wax, Etc., from Plant Material. C. G. Schwalbe, Ger. patent 363,666. **Wochbl. Papierfabr.,** 54, 396 (Feb. 10, 1923). Dilute alkaline solutions, 0.5 to 2 per cent, (as caustic soda, soda ash or ammonia) are employed at temperatures up to 65 deg. C. The extraction liquid is given a continuous or an intermittent motion. Ger. patent 363,667, addition to 363,666. Reducing substances, as sodium sulphite or thiosulphate, are added to the alkaline solution, previous to the extraction, to remove the oxygen.—J. L. P.

K-4. Production of Paper Stock from the Papyrus Plant. H. Steinhiller. Ger. patent 365,571. **Papierfabr.,** 21, 13 (Jan. 7, 1923). The process consists in treating the papyrus plant, prepared by boiling or retting, to a mechanical squeezing action, as by beating or rolling, and a simultaneous washing with water to free it from pith. The remaining fiber bundles are disintegrated in a mechanical way. — J. L. P.

K-7. Production of Material Suitable for Spinning from Disintegrated Birds' Feathers. Martin Jonas. Ger. patent 364,567. **Papierfabr.** 21, 14 (Jan. 14, 1923). Feathers which have been treated to remove all hard parts are added to beaten pulp, with or without an agglutinant, forming a very uniform mixture. This can be used on the paper machine for making spinning paper or spinning paper strips, or employed directly for the manufacture of spinning thread.—J. L. P.

K-7 Beater. O. Massart. Can. patent 225,312, Oct. 31, 1922. Same as Fr. patent 522,794. See **Pulp and Paper** 20, 818 (Sept. 21, 1922). **Paper Trade J.** 74, No. 18, 58, May 4, 1922.-A.P.-C.

K-7 Method of Beating and Mixing Paper Stocks. J. T. Murphy, E. J. Raney and J. L. Carey. Can. patent 225,527, Oct. 31, 1922. When paper is made from two different kinds of stock, one of which is present in much larger proportion than the second, the former is prepared in a (preferably continuous) beater, which discharges into a suitable chest (having about four times the capacity of the beater), from which it is sent to a second beater (either continuous or intermittent) where it is mixed with the other kind of stock.-A.P.-C.

K-7 Pulp Disintegrating Machines for the Manufacture of Paper. Anon. **Wochbl. Papierfabr.** 54, 247-248 (Jan. 27, 1923). Descriptions of the Strobach, Roabus Huber and Schaarmidt hollanders.-J.L.-P.

K-7 Refiner for the Manufacture of Paper. Robert J. Marx. Ger. Patent 366, 809. **Papierfabr.** 21, 58 (Jan. 28, 1923). Basaltic lava or a similar stone is used in the refiner.-J.L.-P.

R — General

R-12 The Relation of Costs and Industrial Engineering in Paper Manufacture. SANFORD E. THOMPSON, Thompson and Lichtner Co. **Paper Trade J.** lxxv, No. 24, 49-52 (Dec. 14, 1922). The author explains and discusses the complementary nature of cost accounting and industrial engineering, showing that the former merely tells when costs are high or low, while the latter shows why this is so and indicates the cure for defects and standardizes conditions of production. This is illustrated by well chosen examples such as estimating the cost of a new order, finding the most profitable lines, raising a department to a paying basis, etc.-A.P.-C.

THE WOODLANDS SECTION

FIRES KILL FREIGHT THORNTON DECLARES

OTTAWA May 5: — "If a man wants to add to the burdens of the Canadian National Railways, let him start a forest fire this year", says Sir Henry Thornton in a statement to the Canadian Forestry Association.

"The Forest is a main pillar of our freight business and tourist travel. I appeal, therefore, to every Canadian to protect the forests".

The lines of the Canadian National are the greatest carriers of forest products of any railway system in the world.

The latest record covering twelve months shows over 11 millions tons of lumber, pulpwood, logs, posts, ties and paper. This compares with 5 million tons carried by the Canadian Pacific.

The total traffic supplied by the forest to all Canadian railways for twelve months was in excess of 22 million tons.

No Canadian commercial interest is so intimately identified with the safety of the forests as a railway carrier. From the millions of wooden track ties, the score of thousands of telegraph and telephone poles, the fifty to sixty million feet of lumber for buildings and repairs, a modern steam road is a forest creature and cannot run a mile until it first has called on a timberland for essential supplies.

The future of the railroads is so intimately tied up with maintenance of the forests along their lines that experts look upon every forest fire in railway territory as having the most serious possible bearing upon their earning capacity.

With every timber tree taking on new value in a rising world market, the forest resources which the C.N.R. and C.P.R. tap throughout such a large part of their territory promise to develop freight traffic far beyond anything as yet realized. The "fly in the ointment" however is the fearful record of forest fires, most of them act by campers, fishermen, prospectors, etc. which are ruining the timber resources nine to ten times as fast as they are being cut. Although millions of tons of pulpwood have been cut and shipped on Canadian railway lines, probably nine times as much has been destroyed by human-set fires.

The sportman, the prospector, the settler and all other users of the woods have the power to maintain or destroy the future revenues of the railways from forest products. This does not take into consideration the menace of forest fires to tourist traffic for, after all, the tourist patronizes Canadian railways because of the lure of the woods and not to inspect our city streets or our factories.

A New Jersey farmer who started a brush fire that spread into a disastrous forest fire has been fined $400, the limit authorized by law, in one of the State's Courts.

GEN. J. B. WHITE TO LEAD CAVALRY

Brig.-General J. B. White, D.S.O. who was in charge of the forestry and woodlands operations of the Riordon Company, was elected vice-president of the Canadian Cavalry Association for the Military District No. 4 at the annual meeting Saturday night at militia headquarters. The election was unanimous.

Brig.-General White has a brilliant army record. He took the Forestry Battalion to France, and was later appointed Deputy Director of Forestry Services. He was awarded the D.S.O. in the Imperial forces for his work in connection with the forestry services in 1917, and in the following year was made an officer of the Legion of Honor by the French Republic, many of his Canadian forestry units serving with the French forces.

AIRPLANES TO FIGHT FIRES IN FORESTS

Ottawa, May 7 — Some changes are to be instituted in the operations of the Canadian Air Force during the present season. Instead of patrolling the forests with a large machine, the method to be employed involves patrol by single seaters. Furnished with wireless apparatus, once a fire is discovered instant communication may be had with the base with which a large machine carrying men and fire fighting gear can proceed to the scene.

The Air Force has done considerable survey and forest fighting work for different provinces during the recent years. The provinces pay the cost of operation plus a small appropriation for depreciation in the machines.

Last year Ontario paid a bill amounting at $38,000, Quebec paid $20,000 for such work and British Columbia $5,000. This work, it was stated would be willingly relinquished to commercial enterprises since the air force is quite sufficiently occupied in co-operating with the various federal departments.

DR. F. G. RAWLING JOINS U. S. F.P.L

Dr. Francis G. Rawling, Luke, Md., has joined the section of pulp and paper at the United States Forest Products Laboratory at Madison, Wis. He will assist with the alkaline pulping process investigations and numerous other problems. Dr. Rawling was formerly with the West Virginia Pulp and Paper Co. He is a graduate of Leeds University, England, where he received the degrees of bachelor of science, master of science, and doctor of science. He was an instructor in chemistry at the University of Edinburgh, Scotland.

After passing the examination for associateship to the Institute of Chemistry of Great Britain and Ireland Dr. Rawling was made a Fellow of the Institute. Dr. Rawling has been with the West Virginia Pulp and Paper Co. as research chemist and chemical engineer since 1913.

Book Reviews

THE DESTRUCTIVE DISTILLATION OF WOOD, by H. M. Bunbury, M.Sc. (Bris.), B.Sc. (Lond), Associate of the Institute of Chemistry: Member of the American Chemical Society: Research Chemist to the British Dyestuffs Corporation. Published 1923, by Benn Brothers, Limited, 8 Bouverie Street, E.C., 4, London. 108 Illustrations, 115 Tables, over 300 pages, Bibliography and Index. Price 35s. post paid.

The Publishers' announcement reads as follows:

"The Wood Distillation Industry has been one of foremost importance for at least half a century. It was formerly confined chiefly to the United States, Scandinavia and the former Central Empires, but was also carried on to a greater or less extent in Russia, France and Great Britain. Its ramifications have now extended to Canada, Japan and Argentina. Among all these countries Great Britain was one of the first in the field; we can, in fact, boast one or two of the oldest firms engaged in this industry in the world. In spite of its long history, great development in recent years, its importance and universality, the number of text-books which have appeared dealing with the industry, and the amount of descriptive and technical literature of wood distillation are both extremely meagre. Only two text-books of any account have been written, viz. Klar's "Technologie der Holzverkohlung" and "Om Trakolning" by Bergström and Wesslén. The former is in German and the latter in Swedish. No book in the English language has yet appeared, a fact all the more remarkable when it is remembered that wood distillation has been practised in this country for well over a century and, further, that the foremost country in the industry to-day, viz. America, is English speaking. There is need, therefore, for an English text-book dealing with this branch of chemical industry.

The present book deals in a most comprehensive manner with the modern wood distillation industry, but in addition to this it claims to contribute materially to two other important subjects. First, there is the problem facing every chemical industry and increasing in magnitude and importance every day, the problem of the utilisation of waste products. In the present case, waste wood is the particular form of waste in question. The amount of wood wasted throughout the world every year in lumbering and logging operations, to say nothing of that produced by sawmills, is simply colossal. A minimum estimate exceeds a hundred million tons. Most of this is burnt or allowed to lie and rot. It is not, and never has been, suggested that distillation is a complete panacea for this appalling wastage. Nevertheless distillation could convert most of this waste wood into such valuable products as acetic acid, methyl alcohol, charcoal, wood turpentine, wood creosote and a host of other direct and derived products, such as acetone, pine oils, pine tar, acetates, methyl esters, formaldehyde, etc.

Not only so, but it has been amply demonstrated that waste wood can be successfully gasified for the production of power and illuminating gas. Many large commercial concerns are now deriving all their power from wood. Further, the fuel question, especially smokeless fuels, is intimately bound up with this problem.

Secondly, there is the problem of destructive distillation in general; it is a method of chemical decomposition and reaction of fundamental importance in many chemical processes. One need only mention the coal gas industry and the "cracking" of oils. Not the least important information in the present book is the detailed account given of the process as applied to cellulosic materials, including the results of the latest research and the views of the most authoritative workers in this field.

Since wood is the basic raw material dealt with, the chemistry of wood is treated in a comprehensive survey that includes the most recent work on its constitution carried out by such well-known investigators as Klason, König, Schwalbe and Schorger.

The very latest developments in wood distillation plant and operating practice are described with particular reference to all essential details of construction and the theory underlying the working and operation of the various plants. No effort has been spared to illustrate everything described in the text, and the book is replete with photographs, sectional drawings, diagrams, graphs and flow sheets.

The references to the literature of the subject are very complete. All the results and data which have appeared in such literature—academic, technological, statistical, and patent — and which have the slightest value, have been set out in over a hundred tables.

It may safely be presumed that the book will prove of extreme value and interest not only to those engaged in the destructive distillation of wood in its various branches, but also to those in other industries in which wood is used as a raw material, as well as to those engaged in research on cellulose and allied substances.

REPORTED ON McLACHLIN TIMBER

The James W. Sewall timber cruising organization of Old Town, Maine and Washington, D. C., is completing the final office work on a detailed cruise and estimate of some 1,000,000 acres of land belonging to McLachlin Brothers Ltd., of Arnprior, Ontario.

The work has taken upwards of 2 years, and has been very thorough and complete. All boundary lines of the various properties have been re-surveyed, and new interior lines for purposes of mapping control run parallel with each other at 2-mile intervals. Cruisers have gridironed the property between these control lines, travelling at close intervals, mapping the country and estimating the timber.

The results of the survey and exploration have been systematically set forth on standardized sheets and maps, filed with the owners at Arnprior. The system is so thorough that any location on which information is wanted, may be turned to in two minutes, and the maps thereof, as well as the estimates of timber and local report, be on the executives desk immediately.

TO RENEW FORESTS

Brockville, Ont., May 5. — For the purpose of encouraging reforestation throughout Eastern Ontario 300,000 pine seedlings are being planted at the farm of the Kemptville Agriculture School, to be available for distribution to farmers next year. Upon ground belonging to the farm which is unfit for cultivation, 13,000 small trees, including pine, walnut, butternut and soft maple, are also being planted in co-operation with forestry branch.

PULP AND PAPER NEWS

Messrs. G. Chahoon and Ellwood Wilson of the Laurentide Company Ltd., attended a directors' meeting of the Canadian Forestry Association held in Montreal.

Following the example of other paper companies, the Brompton Pulp and Paper Company have advanced the rate of wages five cents an hour.

Mr. E. L. Crooker, manager of the Canadian Export Paper Company, Limited, has returned to Montreal after a visit to New York and Atlantic City.

The St. Lawrence Paper Mills, Limited, Three Rivers, P.Q., started up their second newsprint machine last week.

The offices of the Montreal branch of the Provincial Paper Mills, Ltd., have been removed from room 302 to room 803 McGill Building.

A fire broke out on the premises of the Kander Paper Stock Company, Limited, William street, Montreal on the evening of May 4, causing damages estimated at about $13.000. The fire started in a courtyard used for receiving loads of waste paper, and soon spread. The damage is partly covered by insurance.

Mr. S. J. B. Rolland, president of the Rolland Paper Company, Limited, Montreal left for a trip to Europe on the 12th inst. He was accompanied by Mrs. and Miss Rolland.

The Eastern lumber trade is still buoyant, with a very good business passing. The orders for American account continue to come in at a good rate, the great difficulty being to secure suitable stocks of both soft woods and hardwoods. Most of the mills are sold up with dry stocks. A large quantity of the new cut has been sold at substantial advances. There is a possibility that the market will drop when the new cut is available, but to what extent is the problem which is now facing the trade.

T. H. Preston, of the Brantford Expositor, is the new President of the Canadian Daily Newspaper Association and J. M. Imrie, of the Edmonton Journal, is Vice President, being elected at the annual meeting in Toronto during the past week. The principal speaker at the banquet, which was held at the King Edward Hotel, was Don C. Seitz, business manager of the New York World, whose address aroused much interest. He said that in the United States the process of commercialization of newspaper has proceeded with great rapidity during the past few years. One publisher alone owned twenty-two daily newspapers and other chains and groups were springing up in all sections. These huge organizations were created but for one purpose the getting of money. Therein lay the probability of disaster "and," added Mr. Seitz, "if you submerge your public organs in money, there can be only one end—disaster and the destruction of liberty. I strongly advise you as newspaper men to strive against this flood of commercialism."

The Interlake Tissue Mills, Merritton, Ont. has put on the market a new Interlake Household bleached tissue paper towel, of special size. Each roll contains three hundred towels of the proper size for roughing out pots, polishing glass and silverware, wiping up liquids, grease from fried foods, etc.

W. B. Carmichael of Carmichael and Co., Limited, who are large paper dealers in Sydney, Australia, is on his way to Canada and will confer with several mills in regard to doing a greater export business with Australia and New Zealand.

The Thorold plant of the Provincial Paper Mills, Limited, is now connected direct with the water works system of Thorold and a clean, pure supply of water is assured for the making of book and writing papers. The supply was formerly obtained from the canal but has not been found suitable for paper making purposes.

W. F. V. Atkinson, of Toronto, left this week for the Godbout river, on the lower St. Lawrence where he has entered the service of the St. Regis Paper Co. of Canada, whose headquarters are in Montreal. The Company will purchase large quantities of pulpwood from settlers for shipment to its plants on the American side and Mr. Atkinson will have charge of the construction of docks, booms and other work in connection with the handling of the wood.

Fred W. Halls Paper Co., Limited, Toronto, have been appointed selling agents for Parkdale covers and folders. This is a new Made-in-Canada cover paper and is stocked in two weights, ten colors and white. Plate and linen finishes are carried at the mill.

W. H. Sherriff, of the Hodge Sherriff Paper Co., Toronto, left recently on an extended business trip to Western Canada and will visit all the principal cities as far as Vancouver. He will be absent until the end of May.

Arthur Hobson, who for the past two years has represented the Howard Smith Paper Mills in Winnipeg, has returned to Toronto and is now attached to the Ontario sales force. His many friends in the trade are pleased to welcome him back.

B. Y. Brewster, representing British Esparto Papers, Limited, Montreal, was a caller on the trade in Toronto during the past week.

John Hewitt, President of Paper Sales, Limited, Toronto, has returned from a month's business trip to Vancouver and other cities in Western Canada and reports that the prospects for increased trade in the paper line during the coming season are bright.

The Rolland Paper Co., Montreal, have sent out to the trade "stuffers" of their Superfine Linen Record, on all rag, loft dried, bond paper, which the company has been manufacturing for forty years. It is made in white, azure and buff, in a large assortment of sizes and weights.

George Davidson, sales manager of the Howard Smith Paper Mills, Toronto has returned from a trip to Asheville, N. C., accompanied by Mrs. Davidson who has been spending some time in the south and come back much improved in health.

John Ebbels, representing the American Writing Paper Co., Holyoke, Mass, was a caller upon the paper trade in Toronto during the past few days.

C. E. French, who for the past two years has been a member of the sales staff of the Howard Smith Paper Co. in Toronto, left last week for Montreal. He has

been appointed export representative of the firm and will depart shortly on an extended tour to various foreign countries in the interest of the overseas trade of the organization.

David F. Robertson, of Montreal, general manager of Canadian Paperboard Co., spent a few days in Toronto lately. All the plants of the company are running to capacity at the present time.

A provincial charter has been granted to the Planet Printing Co. Limited of Chatham, Ont. with an authorized capital stock of $100,000, to do a general printing and publishing business and to deal in paper boxes, stationery etc. Among the incorporators of the company are Sydney Stephenson, Robert W. Angus and Albert J. Owens, all of Chatham. The new company will take over as a going concern the printing and bookbinding business now carried on in Chatham by Sydney Stephenson.

Official announcement has been sent out to the paper trade by the Continental Paper Products Limited, Ottawa, of which Herman Elsas is President, that J. H. Wright has resigned as manager of the company and H. A. Miller of Ottawa has been appointed as Secretary-Manager. An administrative Committee has been appointed, composed of H. A. Miller, Ottawa, J. A. Nixon, Montreal and J. E. Dennie,Toronto, which will hold meetings every Saturday in Ottawa.

James Thompson, ex- M. L. A., Toronto, who is a member of the Thompson and Heyland Lumber Co. handling large quantities of pulp wood, delivered a stirring address before the Kiwanis Club of West Toronto last week on the need of improved forestry methods and greater precautions form forest fires if Canada was to retain her natural wooded wealth unimpaired. He contrasted the forestry methods of several countries in Europe with those prevailing in Canada and called for a more aggressive policy at home.

The Spruce Falls Co., of Kapuskasing, have taken out 75,000 cords of pulpwood during the past season and all the digesters of the plant are operating to capacity. The company last season built nearly 60 houses at Kapuskasing and this summer will put as many more dwellings. About half of the company's pulpwood is now at the mill and the remainder is being brought down with the spring drives.

The Beacon of Stratford and the Herald of that city have been amalgamated and thus another Ontario city will be served by one daily publication. There are now very few cities in the province with more than one daily.

PRICE BROTHERS EARNED 2.85 P. C.

Quebec, April 25.—The annual report issued by Price Brothers & Company, Ltd., for the fiscal year ended February 28th, 1923, was mailed to the shareholders of the company this afternoon. The report shows that the profits for the year were $2,338,933 and to this sum is added $341,346, the balance brought forward from the previous period, thus making a total of $2,680,280. Earnings were equal to 2.85 per cent. on the common stock outstanding.

From this amount was deducted a sum of $1,973,736, leaving a net balance to be carried forward of $706,-544. The deductions made from the profits of the past year and the balance brought forward from the previous year are as follows:

Bond interest and sinking fund requirements $419,-976; allowance for depreciation of the company's properties and depletion of timber limits, $700,095; distribution among shareholders of dividends totalling two per cent., $853,664.

PLANS FOR SUPERINTENDENTS' MEETINGS

Three divisions of the American Pulp and Paper Mill Superintendents' Association have meetings scheduled for May and June. The Northern Division meets on May 23rd at Bangor, Me. Walter S. Rooney of the Albany Felt Company, Albany, N. Y., will address this meeting on the subject of Felt Manufacturing and the Paper Industry in Japan. Mr. Rooney will also speak on the same topics to the pulp and paper students of the University of Maine at Orono on May 24. The Northern New York Division of the Association will hold its spring meeting June 20, probably at the Woodruff Hotel in Watertown, N. Y. May 18 and 19 have been decided upon as the dates for the spring convention of the Northwest Division, and the scene of the meetings will be Port Edwards and Wisconsin Rapids, Wis. The Technical Association of the Pulp and Paper Industry has been invited to meet with this Division and the managers of the seventy-five or more mills represented have also been invited, so it is expected there will be several hundred visitors in the two Wisconsin mill towns during the two days of the meetings.

CRUISER NEARLY DROWNED

A narrow escape from drowning by the chief cruiser of one its field parties in Nova Scotia has just been reported to the New York Office of James D. Lacey & Company.

Mr. G. L. Knapton of Lawrence, Mass., was the man who nearly became a victim of the treacherous ice in the north woods during the spring breakup. While crossing one of the large lakes a bad spot in the ice sent Mr. Knapton into the water. He was able to kick himself loose from his snowshoes because he uses the Indian snowshoe hitch designed for emergencies of this kind. His companion, Mr. George Snowden of Forest Hills, Long Island threw himself flat upon the breaking ice, and by extending one of his snowshoes Mr. Knapton was able to pull himself to the firm ice on one side.

They hurried to the shore and quickly built a fire which forestalled the consequences which are likely to follow an accident of this kind with men who are less hardy or not inured to the exposures to be met with on winter cruises in the north.

Mr. Knapton's experience as head of Lacey cruising parties has been very extensive. He was one of the men with the Northern Quebec party from the same office which was 16 days "mushing out" to a rail head in February 1921.

BAY SULPHITE CAPITAL UP

Supplementary letters patent issued to the Bay Sulphite Company provide for an increase of capital from $3,500,000 to $8,000,000 by the creation of 45,000 additional common shares of $100 each. According to official notice by the company, the number of directors is increased to nine in accordance with a by-law adopted on March 10, by the board and sanctioned by the shareholders on April 16.

CATALOG RECEIVED

The Pulp & Paper Magazine is in receipt of a new condensed catalog of power transmission equipment made by the Medart Co., St. Louis, Missouri. This bulletin, which is No. 43, contains descriptions of a number of specialities, and will be sent on request.

HIGH PRODUCTION COSTS PREVENT EXPORTING

By B. T. McBAIN, Asst. Gen. Mgr., Nekoosa Edwards Paper Co.

Now that England has arranged with Uncle Sam for the liquation of her war debts and England in turn is now asking France to pay up, while France is doing her best, by means fair or foul, to collect from Germany, we in America all sit back very calmly and watch the passing show.

What are these foreign nations doing? In addition to the taxes of pre-war days, they are burdened with every known brand of tax and license almost to the point of confiscation of one's property; yet, whether willingly or not I cannot say, they are facing the music, swallowing the bitter pill and making the best of it.

These foreign nations, during the World War, learned one thing we did not learn — economy. They not only learned it but practised it during the war of necessity. Today they are even in worse condition, some of them, than during the war and what was economy then would be termed extravagance now. In other words, they are now practising super-economy, if there is such a term.

The markets of the world are open to us, yet our costs of production in many lines, and particularly pulp and paper, are so great that we cannot name a profitable price for export business that will command the orders. Why? Because our mills are not operating under economy principles. They may be producing cheaper than during war times, but many of the extravagant conditions heaped upon manufacturers during that period are still found in almost every locality.

Taxes were high during the war. Everyone expected them to be, but they are not only high still, but in many places are on the increase. School boards, city councils, county boards, government and commissions of all kinds learned that it was easier to do business with a large amount of money in the treasury than under the saving and economy rules of pre-war days. These boards still ask for the large sums of the extravagant time and are getting them. The result is higher taxes and in most cases poorer management in public affairs.

But, bringing the fault right down to our own doors, where we can look upon the question with eyes open, I will say that mill officials, boards of directors and stockholders are in the same boat.

Many trimmings were added to the mill organizations during the war and profitable business days, trimmings that could be counted as expense, legitimate of course, and chargeable against the cost of manufacture. The cost of manufacture was increased but the selling price went higher and the profit was enough usually to pay a decent dividend on the investment, many times greater possibly, than the capital stock.

But, those days are gone. The profit is nil, the cost of production high and there is need for reduction of every item that goes into the cost of manufacture. It does not take a large amount of saving per month in many plants to equal one dollar per ton of product and if everyone will look over what his expenses were before and what they are today, item for item, many will find part of the trouble is with these departments higher up.

If American pulp and paper manufacturers are to be in a position to compete and do business in the markets of the world, Americans must learn the lessons of economy and practice them as our foreign cousins are doing, for while their taxes are high, and must of necessity remain so, they have learned the other more important lessons of economy taught them by the long days of want, that there be no waste and that every possible by-product be gotten out of every raw material.

In the pulp and paper industry today in Germany and in other foreign lands, enough chemicals and oils are extracted from the wood, as well as from what is waste in America, to equal a profit on the investment, even though the original product is sold at cost or even at a loss. Besides, they are getting as nearly 100 per cent. out of their wood as is possible to get by the most up-to-date scientific chemical control.

America must needs look to her laurels, if she is to remain at the top in the Pulp and Paper Industry. Wake up!

TAYLOR IS INDEPENDENT

Howard S. Taylor, formerly Vice-President and Chief Engineer of The Management Engineering And Development Company, of Dayton, Ohio, has withdrawn from this firm and commencing May 1st, and will carry on independently a general engineering practice dealing in Pulp, Paper, Fibre and Power in both Canada and the United States.

Mr. R. W. Leeper and Mr. H. T. Baker are accompanying Mr. Taylor in the make up of his new organization, the former as Power Engineer and the latter in charge of general design. Mr. Leeper is well known to the industry, having had experience with all phases of Pulp and Paper mill power requirements.

Mr. Taylor heads his organization formed a year ago with offices in Montreal, Quebec, as formerly, and his American headquarters will be located in the Jefferson Street Arcade, Dayton, Ohio. Mr. Taylor feels that Dayton, besides being an ideal city, is an excellent business center and that it is a very suitable location for a first-class independent Pulp and Paper Mill engineering organization, situated in the midst of a fast growing paper making district.

Mr. Taylor has carried on this work under his own name in Montreal since the inception of this Montreal office, and will now follow similar procedure as regards the Dayton office, the address being H. S. Taylor, Jefferson Street, Arcade, Dayton, Ohio.

STRATFORD PAPERS MERGE.

Stratford, Ont.,— Announcement has been made of the amalgamation of two Stratford daily newspapers, the Beacon and the Herald, to be known hereafter as the Stratford Beacon Herald.

Application has been made for a charter for a company with a capitalization of $150,000. The officers of the company are as follows: President. W. J. Taylor. Woodstock; Vice-president,L. H. Dingman, St. Thomas; managing director, Charles Dingman, Stratford; additional director, W. F. Tobey and Archibald Thomson.

March timber in the form of logs in the St. John River are in danger of being carried out to sea by reason of the flood conditions in New Bruswick.

UNITED STATES NOTES

Floyd L. Carlisle, president of the St. Regis Paper Company, has been examined for life insurance, the total amount of which will rank among the largest ever taken out on an individual life. Though the details of the matter have not yet been completed, the tentative sum set as adequate protection for all the interests concerned is $3,000,000, of which $2,000,000 has already been definitely decided upon.

Approval of plans for permanent logging operations on 45,000 acres in the Owen's River Mono Lake working circle of the National Forest was announced last Friday by the United States Forest Service which said the area contained a stand of timber estimated at 560,000,000 board feet. It is planned to cut the forest over twice during the next 140 years, a sustained annual yield during the first seventy years of seven million board feet having been forecast.

H. J. Lilleston of the Paraffine Companies, Inc., San Francisco, a concern operating sixteen plants supplying fibre cases to the leading canners and packers of the Pacific Coast, declares that fibre cases, despite dissatisfaction in some quarters, are carrying certain merchandise every bit as satisfactorily as wooden cases, and at a great saving in packing cost and freight. It is no longer a matter of "guess" in this connection for fibre cases are being widely used by canners and packers with great success. In other words, the present day fibre case has made good. As an evidence of Mr. Lilleston's firm's conviction that this is so, it is packing its paints in fibre containers. Mr. Lileston's suggestion to canners and packers is that they would assure their cashing in on the many economies and advantages of fibre cases if they made sure to use the proper weight, size and construction in cases so as to fit particular needs.

Freshets and floods in New England last week wrought considerable damage to industries, railroads and business. Central, eastern and northern Maine suffered most, the lowest estimate of property loss in this region going as high as $3,000,000. Business and industry along the Maine rivers was forced to suspend temporarily, throwing tens of thousands out of employment. Production was curtailed at the Cushnoc Paper Company mill in Augusta. Difficulties were encountered by other paper plants on the Kennebec, but generally such plants were more fortunate than the cotton mills along the river. It was to prevent such damage by floods that the power using corporations of the Kennebec Valley petitioned the last legislature for permission to establish a large reservoir at Dead River. Their petition was denied on account of Governor Baxter's opposition.

The Alger Box Company's factory, Gardiner, Me., was destroyed by fire last week with a loss of $100,000, partially covered by insurance. Company officers have announced that the plant will be rebuilt unless a new one is purchased in the vicinity of Gardiner.

Directors of the Warner & Childs Co., Medford, Mass, manufacturers of corrugated boxes, have elected R. M. Taylor president and treasurer. Mr. Taylor was formerly purchasing agent for the Hinde & Dauch Paper Company.

A publicity campaign to educate the housewife and the retail grocer to use sanitary food containers instead of the ordinary paper bag is being launched on a nation-wide scale by the Victory Bag and Paper Company of Marinetta, Wis. During the next two and a half months the company's ads will appear in about fifty of the leading newspapers throughout the United States.

The Victory management wants to put over the idea that in order to properly protect what is known as a "paper bag" and keep it sanitary and clean, it should be packed in fibre containers instead of the ordinary way of wrapping with paper and string.

The mills of the Charleston Paper Manufacturing Company at Nitro, W. Va., which have been under construction since last August, have been completed. Paper making operations were begun about three weeks ago. About 25 tons of paper a day are being turned out by the machine now in operation, a 92 inch Fourdrinier. A cylinder machine, now being installed, will be ready for use about July 1. It will have a capacity of between 40 and 50 tons of box-board a day. The location of the mill gives it shipping facilities over three rail lines, and its coal supply is drawn from the mines but three miles below the mill.

Return to the pre-war practice of annual appropriations for land purchases instead of forestation was urged on President Harding last week by a delegation header by E. H. Baker of Cleveland, Chairman of the Forestry Committee of the American Newspaper Publishers' Association; R. S. Kellogg of New York, Chairman of the National Forestry Program Committee, and Milton L. Marcuse of Richmond, Va., representing the American Paper and Pulp Association. The delegation, presented by Senator Lodge of Massachusetts, asked the President to have included in the next budget an appropriation for $2,000,000 to purchase lands on the headwaters of streams where forests may be grown and reforestation of these lands. Authorization for such an appropriation, the President was told, exists in the Weeks Forestry Law.

The International Paper Company has removed its offices in New York City to quarters in the new Pershing Square Building, 100 East 42nd Street. This move was prompted by the general exodus of large business houses to the center of the city.

President Norbert A. Considine of the Paper House of Pennsylvania, sailed from New York last Thursday for London. He is planning to visit mills in Finland, Scandinavia and in Germany. Mr. Considine's trip is for the purpose of making further arrangements in connection with the importation of the foreign newsprint which is now being used by each of the Philadelphia dailies for some part of all of their editions. President Edward A. Hemingway of the E. A. Hemingway Company, Philadelphia, paper stock dealers, also set sail last week for an extensive trip through the former warring countries of Europe. On his return Mr. Hemingway will go direct to his lodge in Canada.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, May 8. — The month has opened with a slight improvement in the local paper trade. This is in line with general commercial conditions here: The general tendency in the paper industry is towards a broadening of activities, although there are weeks when business is quite dull. The continued slackness in the printing section is a weak spot, and the outlook is by no means good, in view of the usual falling off in printing orders during the summer months.

There is every indication that the demand for newsprint will be sustained for a considerable period. The American publishers are increasing the average number of pages — in March it was 28 as against 26 in February; while advertising is broadening, the March figures showing an increase of 25 per cent over February, making them the highest recorded for the month of March. For the first quarter of this year advertising was 10% ahead of that of the first three months of 1922. Under such conditions, the consumptions of newsprint has naturally advanced, being in March 10% greater than in March 1922 and 33% greater than in March 1921. Canadian mills are speeding up production to meet this situation. For the first quarter of the year it was 298,093 tons, a gain of 52,408 tons or 21 per cent over the first quarter of 1922. The rise in our exports will be seen from the following:

	Total	To U.S.A.	Other Cts
First Quarter 1923	280,634	271,328	9,306
First Quarter 1922	233,626	217,351	10,255
First Quarter 1921	185,950	166,893	19,057
First Quarter 1920	192,265	168,046	24,219

Shipments to Canadian customers were 10,513 tons in March bringing the total for the first quarter to 27,833 tons compared with 27,141 tons for the first quarter of 1922.

For a considerable time there has been talk of higher prices in book and writing papers, in consequence of increased production costs. The American Writing Paper Company has given a lead in this direction, advancing certain book lines $5 per ton. Although Canadian companies do not invariably follow the examples of those over the border, it will not be a surprise if in this instance mills here also put up their prices in book and fine papers. The mills, as a rule, are fairly busy. The orders for light weight papers are coming in at a good rate. Wrappings are in steady demand at the old values, while boards are inclined to be on the slow side. Paper stock is still firm, with waste paper commanding a ready sale and rags in steady request.

With regard to pulp, the demand for groundwood is quite good, and many inquiries are coming forward. Canadian stocks on hand are small. The price is weak, but with the advance of the season and the streams get lower, the chances are that quotations will advance. Sulphite is steady, with a fair call, while bleached continues to be a firm market, the buying still being of satisfactory volume.

ONTARIO MARKET NEWS

With the advent of May, business in the paper line has picked up considerably and jobbers report a considerable improvement over the previous month which went rather flat after the Easter holidays. With the continued fine weather it is expected that orders will now come in more freely. Consumers have not been purchasing until they have been right up against it for stock and then they wanted rush deliveries. Some wholesalers attribute the prevailing state of suspense to the awaiting of the announcement of the Budget at Ottawa, which is holding many lines of business in abeyance, and the fact that other business concerns have been busy attending to the making out of their annual statements for the payment of income and business taxes, etc.

The call for kraft has fallen off slightly and cover paper demand is rather quiet due to the general slackness of the printing trade, which, it is hoped, will soon revive. Requisitions for tag manila, card index, bristols, etc. have shown some improvement during the past few days. Envelope manufacturers and large stationery firms are not rushed at present.

The prices on all ranges remain firm and there is now no talk heard of any immediate advances. Paper box plants are only fairly well employed but board mills continue active.

The only recent revision in quotations is an advance of five per cent in printers' blanks. One firm during the past week advanced tissue papers about ten per cent but other producers have not followed suit. The demand for the product has been rather quiet owing to the slackness of industries using large quantities of tissue.

The market for newsprint keeps up well and, although there are more consolidations of daily papers in Ontario, it is not expected there will be any diminished requisitions for print paper as bigger issues will be put out. Owing to the advance in wages granted by several large mills to employes, it is declared that an advance of five dollars in the price of news may go into effect in the near future. Costs are climbing all the time and every effort will be made to take care of them.

The pulp market is moderately active and prices are about the same. Ground wood is plentiful and shipments are made promptly. Kraft pulp is only in fair requisition and it is announced that the improvements to the plant of the Dryden Paper Co. at Dryden, are about finished. The output will be seventy five tons daily of sulphate pulp, the greater portion of which will be converted into light and heavy wrapping papers and sulphate building papers.

Rumors are heard of new mills about to be established by American interests in Canada as the agitation for an export duty on pulpwood from freehold lands is said to be gaining strength or, at any rate, is causing certain U. S. concerns to consider getting nearer the sources of raw material. Book mills are going more and more after export trade as the production in the Dominion is now in excess of the demand.

As illustrative of the growth of the paper industry in Canada of recent years and the popularity of Cana-

dian made paper, the following reference which appeared in a Toronto daily recently, tells an interesting tale, it is as follows:

"Made in Canada" is a phrase now so familiar that it attracts little attention at home, however effective abroad, but it had to be started some time, and the man who originated it as a business slogan passed away recently in the person of F. A. Ritchie, of Ritchie and Ramsay, coated paper manufacturers, Toronto. When the firm started some 30 years ago there were warnings that such an enterprise could not compete with American products, but the trade-mark "Made in Canada" was adopted, and afterward became popular with manufacturers throughout the Dominion. These words were particularly in use during the war, when greater production and the patronage of home products were so keenly emphasized. Mr. Ritchie, who gave it birth, was modest in disposition and of a retiring nature, but he never was afraid to stand up for Canada, Canadian industry and Canadian products, even at a time, back in the early '90's, when the name of Canada did not figure nearly as largely or as luminously in world affairs or in the paper arena as it does today.

NEW YORK MARKETS

New York, May 5 — (Special Correspondence) — The paper market in New York, judging from the great majority of reports, continues firm. Firmness is unquestionably the oustanding characteristic of the situation. Perhaps demand has dropped off somewhat for certain lines of paper, perhaps jobbers are not quite as busy as they were a short time ago, perhaps mills are not as deluged with orders as recently, but the fact remains that prices of paper of practically every kind and description rule firm; if anything, the tendency is toward higher levels.

An important development of the week was the announcement of the American Writing Paper Company of an advance of a quarter of a cent per pound or $5 a ton in its lines of book paper. This was looked upon by many in the trade as a forerunner of further price advances all along the line as a result of increased production costs. On the other hand, there were those who believed that further advances in book and fine papers were improbable since the tendency is toward stabilization, while the next several months are proverbially slack times in the paper trade. It is a fact that paper manufacturers are exerting every possible effort to maintain prices on a stable level. None wants to see prices rise to a point where demand might be affected in an unfavorable way, yet price advances are being put into effect from time to time because the higher cost of production necessitates such action. Papermakers have been warned so often recently of the danger of price inflation that they apparently are the last who desire to see prices move too high, and it is therefore more than likely that any price revisions that are made will be based on the absolute necessity of bringing the quotation on the finished product up to a relative level with the cost of manufacturing.

However, it is generally conceded that prices of book paper — on an average — are proportionately below those of most other kinds of paper. Book paper was about the last kind of paper to feel the improvement in business, and while mills are now busily engaged and are in the favorable position of having orders on their files for large tonnages of paper, prices of book paper have not advanced in relative proportion with other grades. Advances such as one of the biggest producing concerns in the country announced this week consequently are not by any means out of line.

There is still a good deal of talk in the trade concerning the probability of higher newsprint prices. A majority of dealers and mill agents in New York seem to expect a revision upward in the contract basis for the third quarter of the year. The fact should not be overlooked that print paper manufacturers are in probably the most favorable position of all producers of paper. Their mills are running at top speed, consumption of paper is setting a new record, and the cost of production is mounting. Wood pulp and other raw material is rising, and an increase in wages has been granted mill workers. Therefore, newsprint manufacturers are in a favorable way to mark up prices; certainly prevailing conditions would seem to warrant such action, and it appears unlikely that an advance would in any manner affect demand since publishers could well afford to pay the increase. A glance at any of the issues newspaper publishers in this and another cities are putting out, with their pages upon pages of advertising, tells the reason why they could afford to pay higher prices for paper.

Demand for fine papers is fair. There is not the snap to buying that was noted a few weeks ago but the call for supplies is steady and printers as a rule are absorbing moderately large supplies. Prices are holding firm. The cost of raw material to writing paper mills has not declined, instead it is rising in most cases; moreover it would require quite sometime for any recession in production costs to be reflected in the finished product.

Book papers are moving in good volume. Mills are well provided with orders and are operating full in an effort to catch up with their commitments. Wrapping paper is in fair demand though orders rather lack the volume of a short time ago. Tissues are in a similar position. Buyers are absorbing fair amounts but demand has subsided to some extent.

Box boards are in moderate call only; that is, plain boards such as news and chip. It is understood that demand as these branches of the paper box industry are levelier than the set-up box branch, while the cheapening trend of old paper costs has influence on board prices to a point where manufacturers are cutting prices to secure orders. Plain chip is reported to have been sold at $55 a ton f.o.b. New York this week, and news board at the same figure, though quotations generally range about $5 per ton above this level.

GROUND WOOD — Mechanical pulp seems to be in a rather easy market position. Demand is fair, from all accounts, but fair only, as consumers are buying in a strictly hand-to-mouth manner and as most of the large users are now enabled to grind for themselves all of the supply they require. It is stated that consumers in the Wisconsin district are buying in the open market fairly actively localities, and indications are that most of the supply of ground wood moving to other than contract customers is finding its destination in the West. Quotations are on a rather broad range. Some domestic producers are said to be asking and getting $40 a ton grinding plants for prime spruce ground wood for prompt shipment, whereas quotations down to as low as $30 a ton at pulp mills have been heard as coming from Canadian sources. Signs are that the bulk of ground wood selling currently is bringing in the vicinity of $35 per ton f.o.b. grinding plants.

CHEMICAL PULP — All kinds of chemical wood pulp rule steady to firm in price and are marked by a fairly large demand. There is no intimation of any recession in prices and those on the selling side of the trade talk bullishy and contend that there is small likelihood of market levels declining for sometime to come. With navigation over the Baltic about ready to commence after the winter's freeze, it is probable shipments from Sweden will soon be moving forward but importers in New York argue that little supply of sulphite or kraft other than contract will be sent from that source to the United States in the next few months owing to the great loss of production caused by the mill lockout in Sweden and the consequent depletion of stocks in that country. Estimates have been received of Swedish manufacturers having sold on contract well over half of their entire 1923 output, and it is maintained here that they will hesitate about committing themselves further until later in the year. Quotations on foreign unbleached sulphite of prime quality hold at around 3.40 cents a pound ex the dock at this port, while Scandinavian kraft pulp is quoted at from 3.35 cents upwards ex dock. One sale of a thousand tons of Swedish kraft was made by a New York importer to a board mill several days ago at 3.25 cents per pound ex dock, but it was argued that this transaction was negotiated at slightly below the market value of this kind of pulp.

RAGS — The higher grades of rags rule fairly firm in price whereas the low qualities as chiefly used by felt paper mills have eased off somewhat this week. Roofing stock has declined some $2 to $3 a ton to where No. 1 packing is selling at around 1.40 cents a pound f.o.b. New York, and No. 2 stock at 1.30 cents. The influx of foreign rags has been so great recently that proofing paper manufacturers are understood to be well supplied at present so that they have been able to diminish their buying of domestic rags. New cuttings are quieter but dealers are maintaining quotations. Here and there slight revisions downward in prices have been made; for example, it is stated that No. 1 white shirt cuttings are available at 13 cents a pound f.o.b. this city against a recently prevailing price of 14 cents. Old white rags are quotably steady, as are thirds and blues.

PAPER STOCK — The decline in waste paper seems to have been checked. Prices have held fairly steady this week in New York, and in several cases slight advances have been recorded. The steadying of the market seems due more to conditions at the packing or supply end of the trade than at the consuming end, however. Prices were getting down so low that collectors were beginning to reduce their operations, and the drop in available supplies appears to have effected a firmer market condition. Folded newspapers have improved their quotable position a trifle. Most dealers want 1.15 cents a pound f.o.b. New York for this grade of stock at present and appear to be obtaining that figure. No. 1 mixed paper is quoted at about 95 cents a hundred pounds at shipping points, and city for common mixed paper at 70 cents. Shavings are quoted at an average of 4.15 cents per pound for No. 1 hard white, and 3.40 cents for No. 1 soft white shavings. Magazines stock continues to be largely neglected by buyers, and heavy No. 1 books are offered at 2.10 cents a pound f.o.b. New York and probably at less without attracting many purchasers. Kraft paper is steady at around 2.15 cents a pound, and ledger stock at 2.60 cents.

HANS LAGERLOEF, President and Treasurer
ORVAR HYLIN, Vice President
MAURICE LONDON, Secretary

TRADE HL MARK

Lagerloef Trading Co., Inc.

52 Vanderbilt Avenue
NEW YORK, N. Y.

Telephones
Murray Hill 4246 4247

WOOD PULP

SOLE AGENTS IN U. S. A., CANADA, MEXICO AND CUBA FOR

Finnish Cellulose Association
Helsingfors, Finland

AND

Finnish Wood Pulp Union
Helsingfors, Finland

OLD ROPE AND BAGGING — Old manila rope is moving toward paper mills in a consistent way and at firm prices. Seven cents per pound at shipping points is the basis most dealers quote on domestic manila rope in No. 1 condition, and it is said that slightly in excess of this figure has been paid by some mills. Old bagging is quiet, with the exception of gunny which is in fair call. No. 1 scrap burlap is quoted at 1.25 cents a pound f.o.b. New York, and roofing bagging at about a cent per pound. No. 1 scrap gunny bagging of domestic origin is held by shippers for 1.65 to 1.75 cents a pound.

FOLEY NOT BUILDING MILLS IN ALBERTA

Through a friend in Montreal we are advised regarding Foley Brothers Incorporated at Minneapolis, who were mentioned in connection with Wolsh and others as intending to build a pulp and paper mill in Alberta that there is no intention of constructing a mill there at the present time. This concern has, however, a large tract of timber in that province which is suitable for pulpwood. There is a large supply of available water power, and the parties mentioned would be glad to get in touch with persons interested in building a mill.

WHAT IS THE INDUSTRIAL CRIPPLE WORTH?

By F. R. BIGLER in "The Valve World"

To the average employer he is not worth much. This is a mistake. A cripple, placed in the right position, is an asset and not a liability in any organization. A cripple, who is O. K. from the collar up, will make good nine times out of ten. The men who make the big money in the world today are the men who use their brains, not their hands and feet.

Men are like matches. There are three kinds of men in every walk of life; there are also three kinds of matches. Everyone is acquainted with the safety match. It is a good match, but will work only under one condition — you must have the box to strike it on. Some men are just like this match. Then there is the common match. It will work any place. There are men like the common match, who will make good wherever they may be. There is also the match with the defective head, which will not work under any condition. Thousands of men are like the defective match. They will not work or make good if given a chance. Now, if you break each of these matches you will find you have not changed the efficiency in the least unless you have damaged the head. This is true of the man who is crippled. His ability is not changed, as far as his earning capacity is concerned, if his head is O. K. Some will make good under certain conditions; others will be successful in any place if given a chance, and there are men, who, like the defective match, will not work, but will become beggars on our streets, regardless of what is done for them.

The public is to blame to a great extent for having the crippled beggar on the streets of our cities. You think you have done a charitable act when you give a cripple 10 cents. The greatest charity in the world is doing that which will make charity unnecessary. If money is not given to the street beggar, he will be forced to do for himself or go to the poorhouse. Most of these men, if they knew the public would not help them to live in idleness, would take advantage of the training that it is now possible for them to get in

Wood Pulp Trading Co., Ltd.

501 FIFTH AVENUE,

NEW YORK CITY

WOOD PULP AGENTS

thirty-five states in the Union. For every dollar spent by a state in training a cripple to earn his livelihood, the United States government will give an additional dollar. The trouble with this law, however, is that there is no way provided for the cripple to maintain himself during his training period. If the civic bodies in our big cities would set aside a fund from their charity drives each year to be used to maintain cripples while being trained, in a few years there would be no cripples begging on the streets or selling shoestrings.

The time is ripe now to educate the employer in regard to giving the cripple a chance in his organization. Henry Ford had 9,653 cripples employed in his plant in 1918, and proved a cripple could become an asset, as he has made a notable success of his business and could not have done so had these men been dead wood in his organizations. If every employer would fill a small percentage of the positions in his organization with cripples, think what it would mean to the two million cripples in the United States. Also think of the money saved in the way of taxes. The more tax payers we have, the smaller the tax. Beggars or inmates of poorhouses pay no taxes, so the burden is thrown back on the public.

Canadian pulp and paper products will be strongly represented on the Canadian exhibition train which will tour France. The products will be supplied by the different mills, while the Canadian Pulp and Paper Association has prepared a small booklet, in French, descriptive of the growth and extent of the industry. Ten thousand copies of this booklet will be issued for general distribution. The exhibition train will thus afford the pulp and paper trade an opportunity of bringing home to the French people the great strides made in the last few years and of showing the quality and variety of our products, and will serve as an additional bond of understanding between the two countries.

HYDROPLANES FOR FOREST PATROL

The Canadian Department of National Defence has placed an order with the Canadian Vickers here for six hydroplanes. These, it is understood, are mainly to be used in forest patrol and fire prevention work. The planes will be manufactured in Montreal.

The Pulp and Paper Trading Company

21 East 40th Street, NEW YORK

Dealers in domestic pulp — chemical and mechanical — and Paper

AGENTS FOR

J. & J. Rogers Company
Ausable Forks, New York

Canadian Kraft, Limited
Three Rivers, Que.

DEALERS IN

Wayagamack Kraft Pulp

E. B. Eddy Co., Ltd.
Hull, Canada

Howard Smith Paper Mills
Montreal, Que.

EASTERN AGENTS FOR

Port Huron Mitscherlich Sulphite
Made by the PORT HURON SULPHITE and PAPER CO.
Port Huron, Mich.

Tenders for Pulpwood and Timber Limit.

Tenders will be received by the undersigned up to and including the 22nd of June, 1923, for the right to cut pulpwood and timber on a certain area situated in the watershed of the Trout and Chapleau Rivers in the districts of Sudbury and Algoma, comprising an area of 1,049 square miles.

Tenderers shall state the amount per cord on pulpwood that they are prepared to pay as a bonus in addition to dues of 80 cents per cord for spruce and 40 cents per cord for other pulpwood, or such other rates as may from time to time be fixed by the Lieutenant-Governor in Council, for the right to operate a Kraft pulp mill and a paper mill.

Tenderers shall also be required to say what theey are prepared to pay, per thousand feet Board measure, for the following classes of timber,, over and above the upset prices in addition to Crown dues:

Upset price — Red and White Pine	— $6.00 pr M ft. B. M.
Spruce (too large for pulpwood)	— $5.00 per M. ft. B. M.
Jackpine (banksian)	— $2.50 per M. ft. B. M.

The Crown dues on Pine including Jackpine being $2.50 and on Spruce $2.00 per M. ft. B. M., or such other rates as may from time to time be fixed by the Lieutenant-Governor in Council.

The successful tenderer shall be required to erect a mill or mills within the limit or at some point in Ontario approved by the Minister, and to manufacture the wood into Kraft pulp, and also such portion thereof into Kraft paper when required so to do.

Parties making tenders will be required to deposit with their tender a marked cheque, payable to the Honourable the Treasurer of the Province of Ontario, for fifty thousand dollars ($50,000), which amount will be forfeited in the event of the successful tenderer not entering into agreement to carry out conditions, etc.

The said $50,000 shall remain on deposit until the Kraft pulp mill, as provided by terms and conditions of sale, ,is erected and in operation. Any timber cut in the meantime shall be subject to payment of dues and bonus as accounts for same are rendered. After the said pulp mill is erected and in operation the deposit of $50,000 may be applied on account of bonus dues as they accrue, but the regulation dues as mentioned above shall be paid in the usual manner as returns for cutting of wood and timber are received and accounts rendered.

The highest or any tender not necessarily accepted.

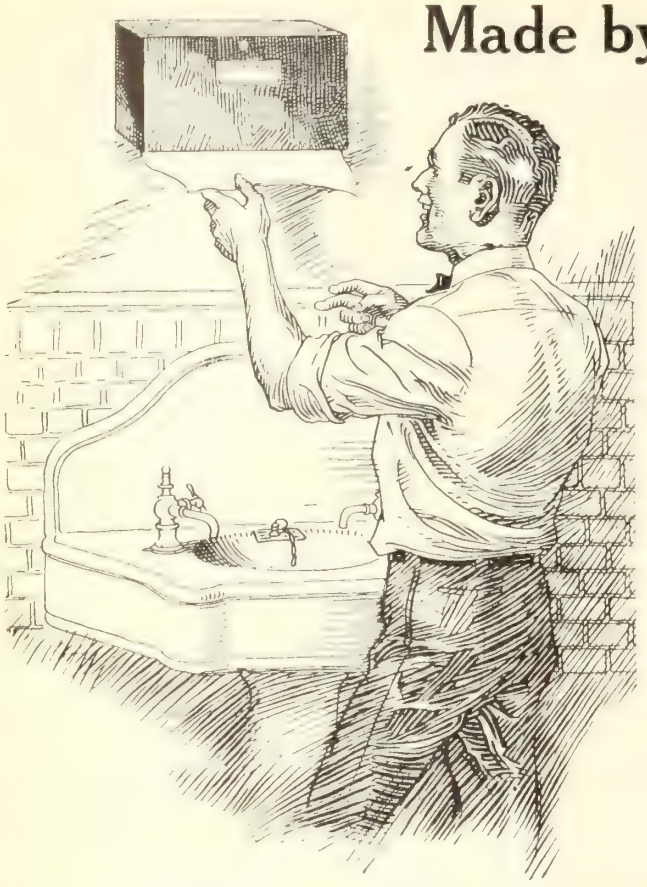
For particulars as to description of territory, capital to be invested, etc., apply to the undersigned.

All tenders should be enclosed in sealed envelopes and marked plainly on outside "Tender for Trout-Chapleau Pulp and Timber Limit."

BENIAH BOWMAN,
Minister of Lands and Forests.

Toronto, April 16th, 1923

N.. B. — No unauthorized publication of this notice will be paid for.



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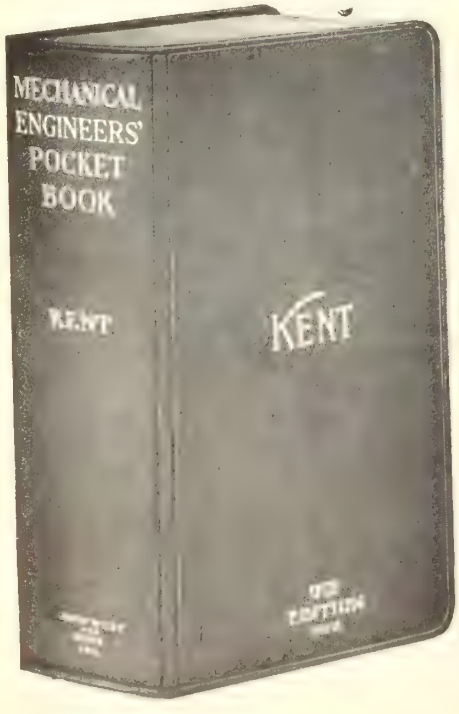
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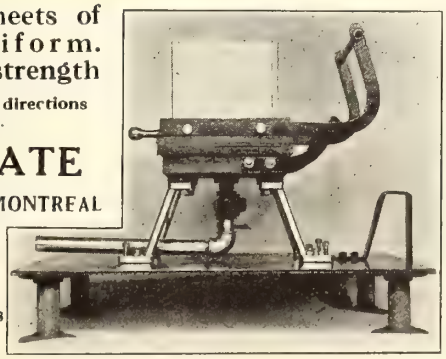
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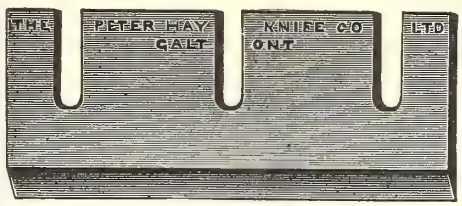
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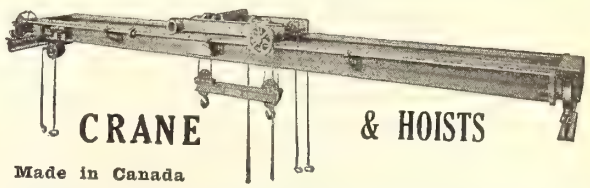
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Buyers who are unable to find in the classification here given such machinery or supplies as they desire are invited to write Service Dept., Pulp and Paper Magazine, Gardenvale, Que., who can, in all probability, refer them to proper sources.

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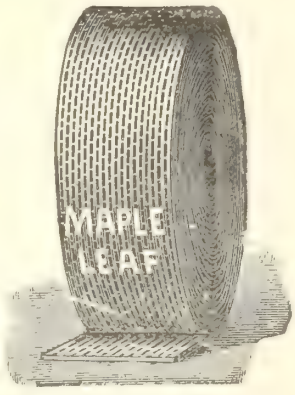
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Can. Johns-Manville Co., Ltd.
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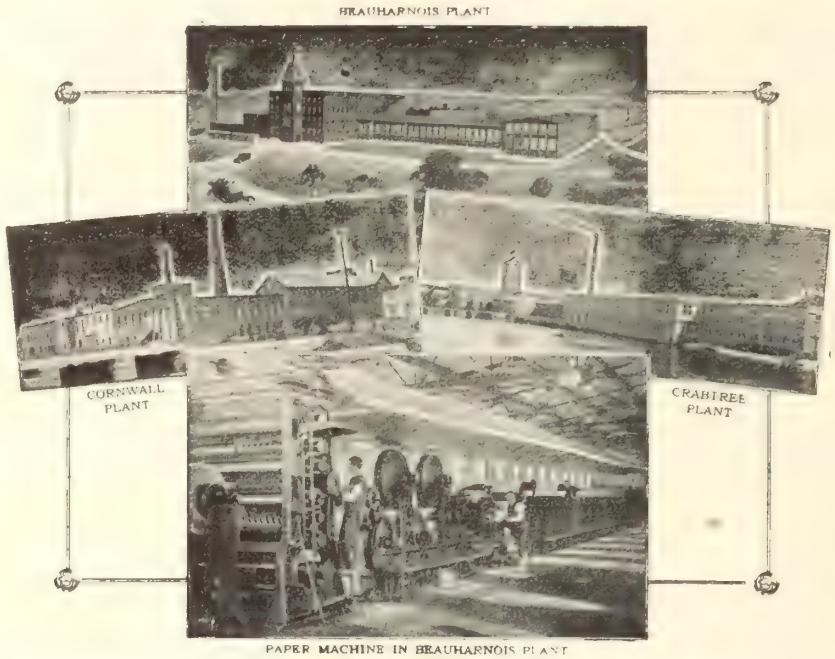
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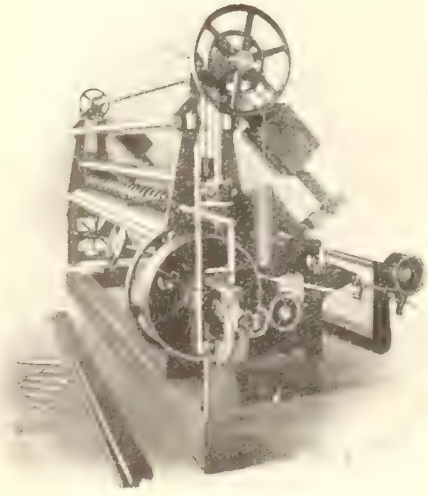
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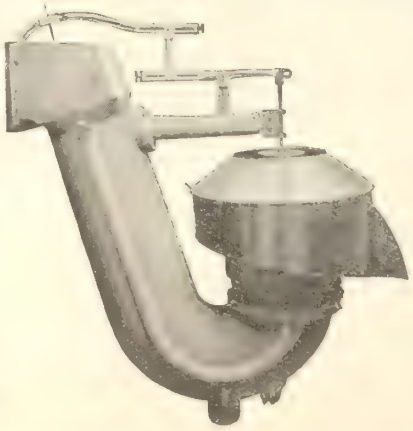
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Goldie & McCulloch Co., Ltd.
Hamilton, William Co., Ltd.
Hendrick Manufacturing Co.
Horton Steel Works, Ltd.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Walsh Plate & Structural Works, Ltd
Waterous Engine Works Co., Ltd

Plates — Calenders:
Norwood Engineering Co.

Pneumatic Collecting and Conveying Systems:
Sturtevant, B. F. Co. of Canada, Ltd.

Pneumatic Thickeners:
Sherbrooke Machinery Co., Ltd.
Waterous Engine Works Co., Ltd

Pneumatic Tools:
Canadian Ingersoll-Rand Co., Ltd.

Power Factor Correcting Devices:
Griswold & Co.

Power Condensers:
Griswold & Co.

Presses:
Boving Hydraulic & Eng. Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Hydraulic Machinery Co., Ltd.
Northern Foundry & Machine Co.
Port Arthur Shipbuilding Co., Ltd.

Presses — Pulp:
Wm. R. Perrin, Ltd.

Press Rolls:
Bertrams, Ltd.
Dominion Engineering Works, Ltd.
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Sherbrooke Machinery C., Ltd.
Waterous Engine Works, Co. Ltd.

Pulleys:
Boving Hydraulic & Eng. Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Canadian Link-Belt Co., Ltd.
Dominion Engineering Works, Ltd.
Hamilton, William Co., Ltd.
Northern Foundry & Machine Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Victoria Foundry Co., Ltd.
Waterous Engine Works, Co. Ltd.

Pulp Slashers:
Hamilton, William Co., Ltd.

Pulp Stones:
American Stone Co., Inc.
Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
International Pulp Stone. Co.
Lombard & Co.
Miramichi Quarry Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.
Smallwood Stone Co.
Smallwood-Low Stone Co.

Pulp Stone Burrs:
Can. Fairbanks-Morse Co., Ltd.

Pulp Thickeners:
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.

Pulp Wood:
Crittsinger, Burt C.
New Ontario Colonization Co., Ltd.

Pumps:

Bertrams, Ltd.
Boving Hydraulic & Eng. Co., Ltd.
Can. Fairbanks-Morse Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Carthage Machine Co.
Dominion Engineering Works, Ltd.
Downingtown Mfg. Co.
Goldie & McCulloch Co., Ltd.
Goold Shapley & Muir Co., Ltd.
Hydraulic Machinery Co., Ltd.
Hamilton, Wm. Co., Ltd.
Harland Engineering Co., Ltd.
Lawrence Machine Co.
McAvity, T. and Son.
Northern Foundry & Machine Co.
Ontario Wind Engine and Pump Co., Ltd.
Peacock Bros., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Smart-Turner Machine Co., Ltd.
Sherbrooke Machinery C., Ltd.
Victoria Foundry Co., Ltd.
Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co. Ltd.
Weir, Ltd., G. & J.

Pumps — Stock:
Canadian Blower & Forge Co., Ltd
Canadian Fairbanks-Morse Co., Ltd.

Pumps — Boiler Feed:
Canadian Allis-Chalmers, Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Goldie & McCulloch Co., Ltd.
Harland Engineering Co., Ltd.
McAvity, T. and Sons. Ltd.
Northern Foundry & Machine Co., Ltd.

Pyrometers:
The Bristol Co

Rag Cutter Knives:
Beveridge Supply Co., Ltd.
J. W. Bolton & Sons, Inc.
Pulp & Paper Mill Accessories, Ltd.

Rails: — Re-laying:
Canadian Equipment Co., Ltd.
Gartshore, J. J.

Recording Ammeters:
The Bristol Co.

Recording Instruments:
Canadian Fairbanks-Morse Co., Ltd.
The Bristol Co.
Peacock Bros., Ltd.

Recording Wattmeters:
The Bristol Co.

Refiners:
American Voith Contact Co., Inc.

Bertrams, Ltd.
Boving Hydraulic & Eng. Co., Ltd.
Can. Fairbanks-Morse Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co. Ltd.

Regulators — Steam.
Beveridge Supply Co., Ltd.
Pickles, W. P.
The Under-Feed Stoker Co. of Canada, Limited.

Regulators:
Mills Works & Machinery, Ltd.
The Under-Feed Stoker Co. of Canada, Limited.

Reverse Gears:
Canadian Fairbanks-More Co., Ltd.
Russel Brothers.

Rock Drills:
Canadian Ingersoll-Rand Co., Ltd.

Rods — Copper, Brass and Bronze:
Imperial Trading Co.
Tallman Brass & Metal, Ltd.

Rods — Welding:

Tallman Brass & Metal, Ltd.

Roll-Winding Machines:

Cameron Machine Co.
Port Arthur Shipbuilding Co., Ltd.

Roofings — Plastic and Liquid:
Barrett Co., Ltd.
Beveridge Supply Co., Ltd.
Can. Johns-Manville Co., Ltd.
Reed & Co., Ltd., Geo. W.

Rope:
Jones & Glassco.
Goldie & McCulloch Co., Ltd.

Rosin Size:
Hercules Naval Stores
Vera Chemical Co. of Canada, Ltd.
Wilson Paterson Co.

Rotary Cutter Knives:
J. W. Bolton & Sons, Inc.
Pulp and Paper Mill Accessories, Ltd

Rotary Sulphur Furnaces:

MacKinnon Steel Co., Ltd.
Stebbins Eng. & Mfg. Co.

Safes:
Can. Fairbanks-Morse Co., Ltd.
Goldie & McCulloch Co., Ltd.

Salt:
The Canadian Salt Co., Ltd.

Salt Cake:

M. Gottesman & Co., Inc.
The Kalbfleisch Corporation

Save-Alls:
Canadian Ingersoll-Rand Co., Ltd.
MacKinnon Steel Co., Ltd.
Pulp and Paper Mill Accessories, Ltd.
Port Arthur Shipbuilding Co., Ltd.
Sherbrooke Machinery Co., Ltd.
Waterous Engine Works, Co. Ltd.

Slitters and Rewinders:
Cameron Machine Co.
Port Arthur Shipbuilding Co., Ltd.

Saw Frames:
Can. Fairbanks-Morse Co., Ltd.
Goold Shapley & Muir Co., Ltd.
Ontario Wind Engine and Pump Co. Ltd.
Waterous Engine Works, Co., Ltd.

Scales:
Can. Fairbanks-Morse Co., Ltd.
International Bus. Machines Co. Ltd

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Union Screen Plate Co. of Canada
Waterous Engine Works, Co., Ltd.

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Bertrams, Ltd.
Boving Hydraulic & Eng. Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Can. Fairbanks-Morse Co., Ltd.
Can. Link-Belt Co., Ltd.
Hamilton, William Co., Ltd.
Hendrick Manufacturing Co.
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Pulp and Paper Mill Accessories, Ltd.
Sherbrooke Machinery Co., Ltd.
Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co., Ltd.
Westbye, P. P.

Separators — Oil:
Canadian Fairbanks-Morse Co., Ltd.
Goldie & McCulloch Co., Ltd.

Separators — Steam:
Canadian Fairbanks-Morse Co., Ltd.
Crane Co., Ltd.
Foxboro Co., Inc.
Peacock Bros., Ltd.

Shafting:

Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Northern Foundry & Machine Co., Ltd
Victoria Foundry Co., Ltd.
Waterous Engine Works, Co. Ltd.

Sheet Lead:

The Canada Metal Co., Ltd.

Sheets — Copper, Brass and Bronze:

McAvity & Sons, Ltd., T.
Tallman Brass & Metal, Ltd.

Sheet Samplers:
John Date.

Shingle Machines:
Canadian Fairbanks-Morse Co., Ltd.
Victoria Foundry Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.

Shower Pipes:
Dominion Engineering Works, Ltd.
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.

Shredders:

Size:

Vera Chemical Co., Ltd.

Slab Chippers:
Boving Hydraulic & Eng. Co., Ltd.
Waterous Engine Works, Co., Ltd.

Slitters and Re-Winders:
Bertrams, Ltd.
Cameron Machine Co.
Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Langston Co., Samuel M.
Morrison, The J. L. Co.
Ticonderoga Machine Works.
Walmsley, Charles & Co., Ltd.

Slitting and Roll-Winding Machines:
Cameron Machine Co.

Sinks & Tops — Laboratory, Acid Proof:
Alberene Stone Co.

Smelter Lining:

Alberene Stone Co.
Beveridge Supply Co., Ltd.

Smoke Stacks:
Can. Des Moines Steel Co., Ltd.
Dominion Engineering Works, Ltd.
Hamilton Co., Wm.
Hendrick Manufacturing Co.
Horton Steel Works, Ltd.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Waterous Engine Works, Co., Ltd.

Snow Plows:
Canadian Equipment Co., Ltd.

Soda Ash:
Wilson, Paterson Co.

Soot Cleaners:
Beveridge Supply Co., Ltd

Solder:

Canada Metal Co.
McAvity T. & Son.
Tallman Brass & Metal, Ltd.

Spiral Conveyors:

Canadian Fairbanks-Morse Co., Ltd.
Can. Link-Belt Co., Ltd.
Waterous Engine Works, Co., Ltd.

Splicing Tissue:
Bemis Manufacturing Associates.

Splitters:
Carthage Machine Co.
Hamilton, William Co., Ltd.

Split Pulleys — Wood and Steel:

Canadian Fairbanks-Morse Co., Ltd.
Waterous Engine Works, Co., Ltd.

Sprinkler Tanks:

Can. Des Moines Steel Co., Ltd.
Hendrick Manufacturing Co.
Horton Steel Works, Ltd.

Tanks — Acid:

White, W. H.
Walsh Plate & Structural Works, Ltd.

Sprocket:

Canadian Fairbanks-Morse Co., Ltd.
Can. Link-Belt Co., Ltd.
Hamilton Gear & Machine Co.
Hamilton, William Co., Ltd.
Northern Foundry & Machine Co.
Waterous Engine Works, Co., Ltd.

Stacks:
Dominion Engineering Works, Ltd.
Hamilton, William Co., Ltd.
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.

Stackers:
Canadian Link-Belt Co., Ltd.

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Horton Steel Works, Ltd.
MacKinnon Steel Co., Ltd.
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Crane Co., Ltd.
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Waterous Engine Works, Co. Ltd.

Steam Shovels:
Canadian Equipment Co., Ltd.

Steel Barrels:
Dominion Engineering Works, Ltd.
Smart-Turner Machine Co., Ltd.

Steel Plate Construction:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.

Steam Turbines:
Canadian Fairbanks-Morse Co., Ltd.
Goldie & McCulloch Co., Ltd.
Sturtevant, B. F. Co. of Canada, Ltd.

Stokers — Mechanical:
Babcock & Wilcox, Ltd.
The Under-Feed Stoker Co. of Canada, Limited.

Stones — Pulp:
American Stone Co.
Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
International Pulp Stone Co.
Lombard & Co.
Miramichi Quarry Co.
Pulp & Paper Mill Accessories, Ltd.
Smallwood Stone Co.
Smallwood-Low Stone Co.

Stoneware — Chemical, Acid-Proof:
Alberene Stone Co
Beveridge Supply Co., Ltd.

Stop Log Winches:
Dominion Engineering Works, Ltd.
Hamilton Co., Wm.
Northern Foundry & Machine Co., Ltd.
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Strainers — Water:

Can. Link-Belt Co., Ltd.
Babcock & Wilcox, Ltd.

Straw Cutters:
Bertrams, Ltd.

Can. Des Moines Steel Co., Ltd.
Dominion Engineering Works, Ltd.
MacKinnon Steel Co., Ltd.

Structural Steel Works:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.
Walsh Plate & Structural Works, Ltd.

Stuff Sheets:
Can. Des Moines Steel Co., Ltd.
Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co., Ltd.

Suction Rolls:
Dominion Engineering Works, Ltd.
Hydraulic Machinery Co., Ltd.

Sulphate of Alumina:
H. D. Pochin & Co., Ltd.
Gottesman, M. & Co., Inc.
Imperial Trading Co.
The Kalbfleisch Corporation
Wilson — Paterson Co.

Sulphite Mill Equipment:
Alberene Stone Co.
Beveridge Supply Co., Ltd.
Dominion Engineering Works, Ltd
Hamilton, William Co., Ltd.
Hydraulic Machinery Co., Ltd.
MacKinnon Steel Co., Ltd.
McAvity, T. & Son.
Port Arthur Shipbuilding Co., Ltd.
Walsh Plate & Structural Works, Ltd
Waterous Engine Works, Co., Ltd.

Sulphite Pulp:

Mattagami Pulp & Paper Co., Ltd.

Sulphate Mill Equipment:
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Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Hamilton, William Co., Ltd.
MacKinnon Steel Co., Ltd.
McAvity, T. & Son.
Port Arthur Shipbuilding Co., Ltd.
Stebbins Eng. & Mfg. Co.
Texas Gulf Sulphur Co.
Walsh Plate & Structural Works, Ltd.
Waterous Engine Works, Co., Ltd.

Sulphite Mitscherlich:
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Sulphur:

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Carthage Machine Co.
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Port Arthur Shipbuilding Co., Ltd.
Stebbins Eng. & Mfg. Co.
Walsh Plate & Structural Works, Ltd.
Waterous Engine Works, Co., Ltd.
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Superheaters — Steam:

Babcock & Wilcox, Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Goldie & McCulloch Co., Ltd.

Switchboards:
Canadian Fairbanks-Morse Co., Ltd.
Canadian General Electric Co., Ltd.
Harland Eng. Co., Ltd.
Northern Electric Co., Ltd.

Tanks:
Canadian Ingersoll-Rand Co., Ltd.
Can. Des Moines Steel Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Can. Chicago Bridge & Iron Co., Ltd.
Canadian Pipe Co., Ltd.
Dominion Engineering Works, Ltd.
Goldie & McCulloch Co., Ltd.
Goold Shapley & Muir Co., Ltd.
Hamilton, Wm. Co., Ltd.
Hendrick Manufacturing Co.
Horton Steel Works, Ltd.
Ontario Wind Engine and Pump Co. Ltd.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd
Pacific Coast Pipe Co., Ltd.
Reed Co., Ltd., Geo. W.
Toronto Iron Works, Ltd.
Victoria Foundry

Tanks — Acid:
Hendrick Manufacturing Co.

Tanks — Elevated — Steel:
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Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.
Tanks — Ore:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.
Smart-Turner Machine Co., Ltd., The
Waterous Engine Works, Co., Ltd.
Tanks — Storage:
Hendrick Manufacturing Co.
Ontario Wind Engine and Pump Co. Ltd.
Port Arthur Shipbuilding Co., Ltd.
Tanks — Wood:
Canadian Pipe Company, Ltd.
Pacific Coast Pipe Co.
Goold, Shapley & Muir Co., Ltd.
Ontario Wind Engine and Pump Co Ltd.
Port Arthur Shipbuilding Co., Ltd.
White, W. H.
Telephone — Automatic:
Northern Electric Co., Ltd.
Telephone — Apparatus:
Northern Electric Co., Ltd.
Temperature Controllers:
The Bristol Co.
Temperature Instruments:
The Bristol Co.
Canadian Fairbanks-Morse Co., Ltd.
Testers — Green Stock:
John Date.
Tanks, Steel, Pressure and Storage.
Hendrick Manufacturing Co.
Horton Steel Works, Ltd.
Timberland Brokers:
Crittsinger, Burt C.
Can. Woodland & Pulp Agency
Lacey, James D. & Co.
Thermometers:
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Canadian Fairbanks-Morse Co., Ltd.
Canadian Ingersool-Rand Co., Ltd.
Thrust Bearings:
Canadian Fairbanks-Morse Co., Ltd.
Kingsbury Machine Works.
Tissue — Splicing:
Bemis Manufacturing Associates.
Towers:
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Hendrick Manufacturing Co.
Walsh Plate & Structural Works, Ltd.
Tower Linings:
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Stebbins Eng. & Mfg. Co.
Transformer:
Northern Electric Co., Ltd.
Transmission Machinery:
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Canadian Fairbanks-Morse Co., Ltd.
Can. Link-Belt Co., Ltd.
Hamilton Co., Ltd., Wm.
Port Arthur Shipbuilding Co., Ltd.
Renold of Canada, Ltd., Hans.
Waterous Engine Works, Co., Ltd.
Traps — Steam:
Can. Johns-Manville Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Crane Co., Ltd.
Goldie & McCulloch Co., Ltd.
Sturtevant, B. F. Co. of Canada, Ltd.
Travelling Cranes:
Boving Hydraulic & Eng. Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Smart-Turner Machine Co., Ltd.
Trolleys:
Boving Hydraulic & Eng. Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Northern Crane Works, Ltd.
Smart-Turner Machine Co., Ltd.
Waterous Engine Works, Co., Ltd.
Troughs:
Hendrick Manufacturing Co.
Trucks:
Hamilton Gear & Machine Co.
Canadian Fairbanks-Morse Co., Ltd.
Northern Crane Works, Ltd.
Trucks — Pulp:
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Port Arthur Shipbuilding Co., Ltd.
Tubes — Copper, Brass, Bronze:
Tallman Brass & Metal, Ltd.
McAvity & Sons, Ltd., T.
Tubes Cleaners:
Babcock & Wilcox, Ltd.
Canadian Fairbanks-Morse Co., Ltd.
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Dominion Engineering Works, Ltd.
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Hamilton Co., Ltd., Wm.
Smith, S. Morgan.
Sturtevant Co. of Canada, Ltd., B. F
Terry Steam Turbines Co.
Twine:
Beveridge Supply Co., Ltd.
Victoria Paper & Twine Co., Ltd.
Valves:
Canadian Fairbanks-Morse Co., Ltd.
Crane Co., Ltd.
Diamond State Fibre Co. of Can., Ltd.
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The Under-Feed Stoker Co. of Canada, Limited.
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Ross, J. O. Engineering Co.
Vats:
Hendrick Manufacturing Co.
White, W. H.
Ventillators:
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Reed, Co., Ltd., Geo. W.
Sturtevant Co. of Canada, Ltd., B. F.
Warping Machinery:
Russel Brothers
Water Intake Screens:
Canadian Link-Belt Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Water Power Plants:
Boving Hydraulic & Eng. Co., Ltd.
Water Supply Systems:
Canadian Fairbanks-Morse Co., Ltd.
Can. Des Moines Steel Co., Ltd.
Goold, Shapley & Muir Co., Ltd.
Water Wheels:
Boving Hydraulic & Eng. Co., Ltd.
Dominion Engineering Works, Ltd.
Hamilton Co., Wm.
McAvity & Sons, Ltd., T.
Northern Foundry & Machine Co., Ltd.
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Westbye, P. P.
Waterous Engine Works Co., Ltd.
Whyte, W.
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Christie, John Co.
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Water Filters:
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Water Tanks:
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Canadian Pipe Co., Ltd.
Goold Shapley & Muir Co., Ltd.
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.
Pacific Coast Pipe Co., Ltd.
Walsh Plate & Structural Works, Ltd.
White, W. H.
Welding:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.
Welding Rods:
Tallman Brass & Metal, Ltd.
Waste Paper:
John C. Christie Co.
Wet Machines:
Canadian Fairbanks-Morse Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Carthage Machine Co.
Dominion Engineering Works, Ltd.
Eng. & Machine Works of Can., Ltd
Hamilton, William Co., Ltd.
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Northern Foundry Machine Co., Ltd.
Sherbrooke Machinery C., Ltd.
Waterous Engine Works Co., Ltd.
Winders:
Canadian Fairbanks-Morse Co., Ltd.
Cameron Machine Co.
Langston Co., Samuel L.
Port Arthur Shipbuilding Co., Ltd.
Ticonderoga Machine Works
Wire Cloth:
The Johnson Wire Works, Ltd.
Wire Cleaners:
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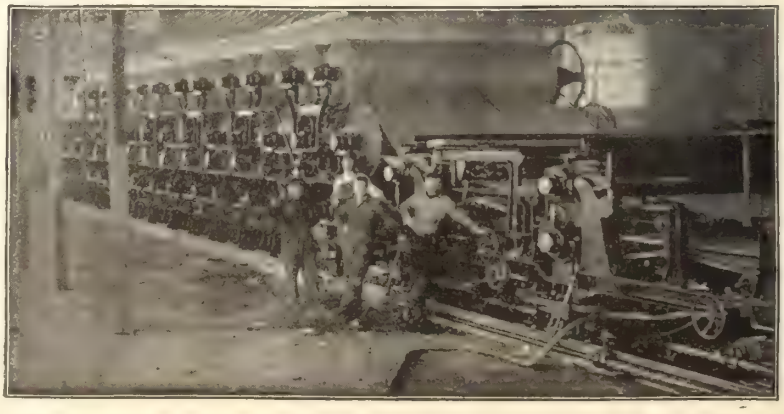
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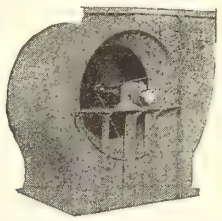
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ALPHABETICAL LIST OF ADVERTISERS

See Classified List on Page 73.

Unpaged advertisements appear in every other issue

A

Alberene Stone Co., Ltd. . . . . .
Abitibi Power & Paper Co. Ltd. . . 84
Acer, J. A. H. & Co., Ltd. 74
American Voith Contact Co., Inc. . .
American Stone Co. 24
American Woodpulp Corporation . . 24
Ayers, Limited 11

B

Babcock & Wilcox, Ltd. 3
Barrett Co., Ltd., The 17
Barber, W. J. & Co., Ltd. 22
Bathurst Company, Ltd. 82
Bates & Innes, Ltd. 25
Bemis Manufacturing Association . 30
Bertrams, Limited . . . . . .
Belgo Paper Co., Ltd., The 82
Beveridge Supply Co., Ltd. . . . . .
Black-Clawson Co., The 86
Bolton, John W. & Sons, Inc. . . . 26
Boving, Hydraulic & Engineering Company, Ltd. . . . . . .
Bristol Co., The 80
Brompton Pulp & Paper Co., Ltd. . . 82
Burgess, E. T. . . . . .

C

Canada Metal Co., Ltd. 30
Cameron Machine Co. 87
Canadian Combustion Co., Ltd. . . . .
Canadian Barker Co. . . . . .
Canada Foundries & Forgings, Ltd. 72
Canadian Des Moines Steel Co., Ltd. 18
Canadian Elixman Co., Ltd. . . . . .
Canadian Equipment Co., Ltd. . . . .
Canadian Fairbanks-Morse Co., Ltd. 32
Canadian Ingersoll-Rand Co., Ltd. . 16
Canadian Johns-Manville Co., Ltd. . 4
Canadian Nashua Paper CoC., Ltd. .
Canadian Paperboard Co., Ltd. . . 24
Canadian Link-Belt Co., Ltd. . . . .
Canadian Robert Dollar Co.,, Ltd. . .
Canadian Pipe Co., Ltd. 29
Canadian Sirocco Co., Ltd. . . . . .
Canadian S K F Co., Ltd. . . . . .
Canadian Vegetable Parchment Co., Limited . . . . . .
Canadian Westinghouse Co., Ltd. . .
Carey, Jas. L. 22
Capital Wire Cloth & Mfg. Co., Ltd. 26
Christie., George, Ltd. 80
City of Hull . . . . . .
Claflin Engineering Co., The 22
Clayton, Neil & Jones, Ltd. 6
Combustion Engineering Corporation, Ltd. 5
Crane, Ltd. . . . . . .
Crittsinger, Burt Co., Inc. 21
Cleveland Stone Co., The . . . . . .

D

Date, John 71
Deitcher Brothers 87
Dept. of Lands, Forests & Mines Ontario 70
Dodge Mfg. Co. of Canada, Ltd. . .
Dominion Belting Co. 74
Dominion Engineering Works, Ltd. 1
Dominion Oxygen Co., Ltd. . . . .
Donnacona Paper Co., Ltd., The . . 24
Don Valley Paper Co., Ltd., The . . 24
Downingtown Mfg. Co. 25
Dryden Paper Co., Ltd. 24
Dunlop Tire & Rubber 74
Dunham, C. A. Co. . . . . .

E

Elixman Paper Core Co., Inc. . . . .
Elk Fire Brick Co. of Canada, Ltd.
English China Clays, Ltd. . . . . .
Engineering & Machine Works of Canada, Ltd. . . . . .

F

Ferguson, H. S. 28
Ford, J. & Co. 71
Foundation Co., Ltd. 22

G

Galt Knife Co., Ltd. 27
Garden City Paper Mills, Ltd. . . .
Geigy Co., Inc. 72
Goldie & McCulloch Co., Ltd. . . .
Goold, Shapley & Muir Co., Ltd. . . 26
Gottesman, M. & Co. 29
Grasselli Chemical Co., Ltd., The . .
Graton & Knight Mfg. Co., The . . 19
Griswold & Co. . . . . .
Gutta Percha & Rubber, Ltd. . . . 12

H

Hamblet Machine Co. 18
Hamilton Gear & Machine Co 87
Hamilton, Wm. Co. of Canada, Ltd. 89
Hans Renold of Canada, Ltd. . . . .
Hardy, George F. 22
Harland Engineering Co. of Canada
Hay Knife Co., Ltd., Peter 71
Hendrick Mfg. Co. . . . . . .
Hercules Powder Co. . . . . .
Holliday, L. B. & Co., Ltd. . . . . .
Huestis, A. M. . . . . .
Hydraulic Machinery Co., Ltd. . . . 7

I

Ideal Patents Corporation 20
Industrial Engineering Co., Ltd. . . 86
International Business Machines Co., Ltd. 23
International Pulp Stone Co., The 27
Interlake Tissue Mills, Ltd. . . . .

J

Jenkins Brothers, Ltd. . . . . .
Jenssen Co., G. D. 23
Johnson Wire Works, Ltd., The . . 30
Jones & Glassco, Regd. . . . . .

K

Kalbfleisch Corporation, The . . . .
Kander Paper Stock Co., Ltd., The 24
Kenwood Mills, Ltd. 13
Kimball, Herbert S. 22
Kingsbury Machine Works . . . . .
Klipstein & Co., Ltd., A. . . . . .

L

Lacey, James D. & Co. 21
Lagerloef Trading Co. 67
Langston, Samuel M. Co. 27
Laurentide Co., Ltd. 84
Lawrence Machine Co. . . . . .
Lombard & Co. Inc. 27

M

Macpherson Co., The A. 71
Management Engineering & Development Co., The 23
Mead, Patton & Co., Inc. . . . . .
McAvity T. & Sons, Ltd. . . . . .
McKinnon Steel Co., Ltd. 87
Mills Works & Machinery, Ltd. . . . 80
Miramichi Quarry Co., Ltd., The . . 18
Montabone, J. A. F. . . . . . .
Montreal Locomotive Works, Ltd. .
Morrison, J. L. Co. 78

N

National Paper Stock Co., The 24
New Ontario Colonization Co., Ltd. 26
Niagara Wire Weaving Co., Ltd. The 74
Northern Crane Works, Ltd. 71
Northern Electric Co., Ltd. . . . . .
Northern Foundry & Machine Co. . 6
Norwood Engineering Co. of Canada, Limited 26

O

Oliver Continuous Filter Co. . . . .
Ontario Wind Engine & Pump Co., Limited . . . . . .

P

Pacific Coast Pipe Co., Ltd. 29
Patton, Mead & Co., Inc. . . . . .
Peacock Brothers, Ltd. 19
Penmans, Limited 20
Pochin, H. D. & Co., Ltd. 71
Pollack Bros. & Co., Ltd. 2
Port Arthur Shipbuliding Co., Ltd. 28
Porritts & Spencer Co, Ltd. 72
Price Bros. & Co., Ltd. . . . . .
Price & Pierce, Ltd. 82
Provincial Paper Mills, Ltd.. . . . 76
Pusey & Jones Co., ,The . . . . . .
Pulp & Paper Trading Co., The . . 70
Pulp & Paper Mill Accessories, Ltd. 85

Q

Quarries, C. & M. Co. 71

R

Reed, Geo. W. & Co., Ltd . . . . . .
Relph, Darwen & Pearce 86
Rolland Paper Co, The . . . . . .
Ross Engineering of Canada, Ltd. . . 27
Russell Brothers 72

S

Sadler & Haworth 2
Sewall, Jas. W. 22
Sherbrooke Machinery Co. 89
Smallwood Stone Co., The 24
Smallwood Low Stone Co., Ltd. . . 97
Smith Foundry Co., Ltd., The . . . 10
Smith Howard Paper Mills, Ltd. . . 78
Spanish River Pulp & Paper Mills, Limited 86
Sterling Electrical Co., ... 22
Stinson-Reeb Buliders' Supply Co., Limited 71
Stebbins Engineering & Mfg. Co. 22
St. Maurice Paper Co., Ltd. 71
Sturtevant Co. of Canada, Ltd. . . 87

T

Tallman, Brass & Metal, Ltd. . . . .
Taylor, J. A. 9-80
Taylor, H. S., Ltd. 23
Texas Gulf Sulphur Co. 32
Ticonderoga Machinee Works . . . .
Tippett & Co., Ltd. 28
Tyler, W. S. Co., The 27
Trimbey Machine Works . . . . . .

U

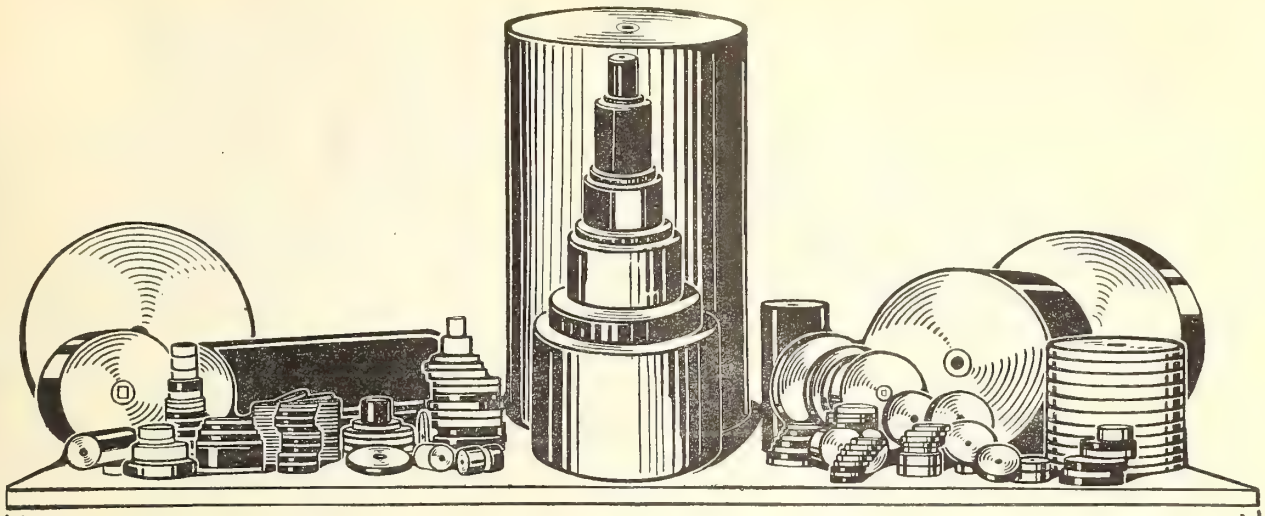
Underfeed Stoker Co. of Can., Ltd.
Union Screen Plate Co. of Canada, Limited 87
Union Sulphur Co., The 30
United Wire Works, Ltd. 28

V

Vera Cheemical Co of Canada 72
Victoria Foundry Co., Ltd. 21
Voorhees Rubber Mfg. Co. 72

W

Wallace, John H. & Co., Ltd. 23
Wardlaw, T. D. & Son 72
Walmsley, Charles & Co., Ltd. . . 14-15
Warren, Kenneth L. 22
Warwick Woollen Mills, Ltd. 28
Watford Engineering Works, Ltd. .
Waterous Engine Works 90
Wayagamack Pulp and Paper Co., Limited . . . . . .
Weir, G. & J. (Canada), Ltd. . . . 19
Westbye, P. P. . . . . . .
White, W. H. 29
Whyte, William 29
Wilson Patterson Co., The 71
Wood Pulp Trading Co, Ltd. . . . 68



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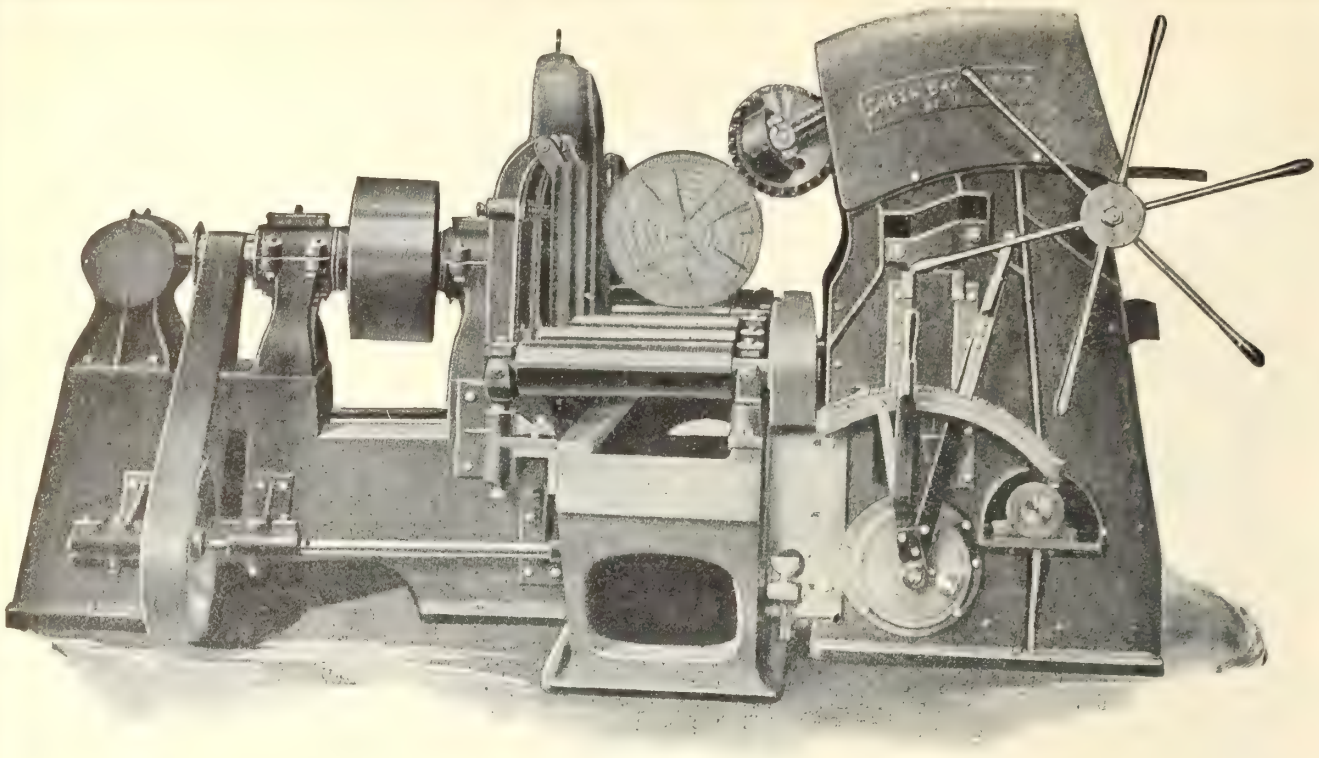
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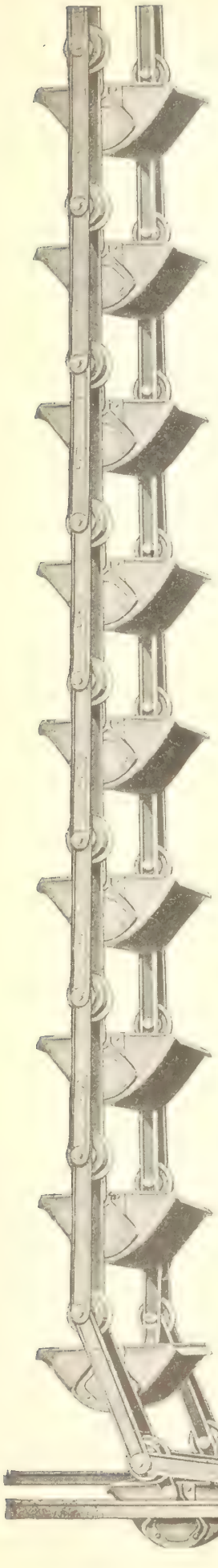
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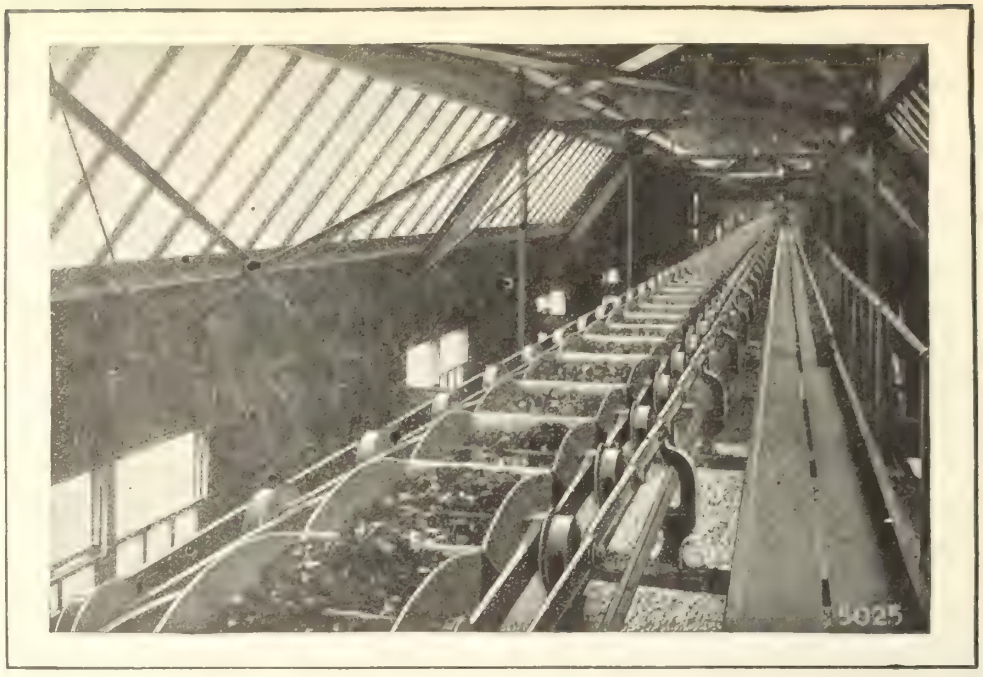
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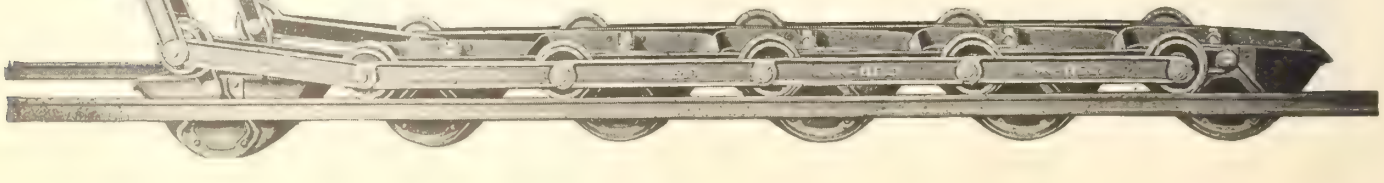
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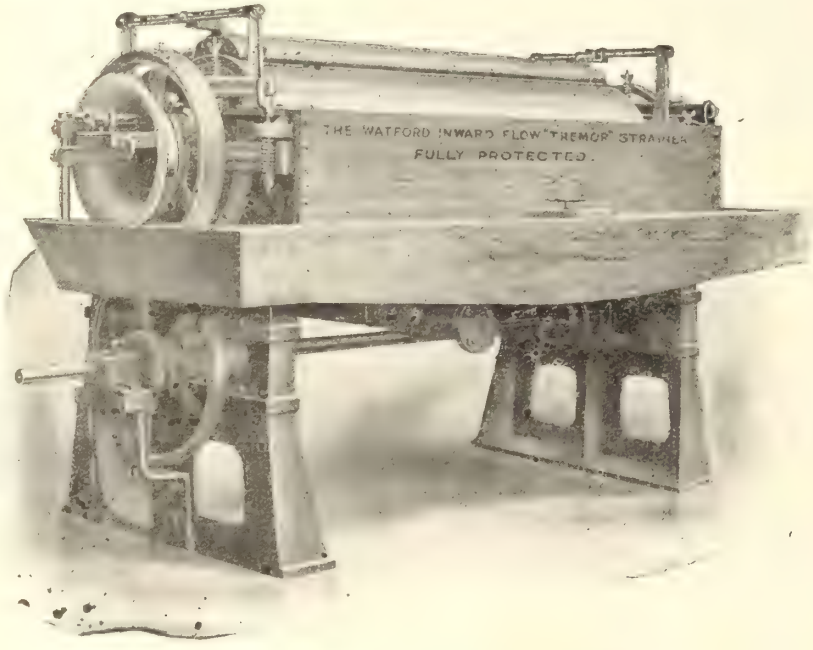
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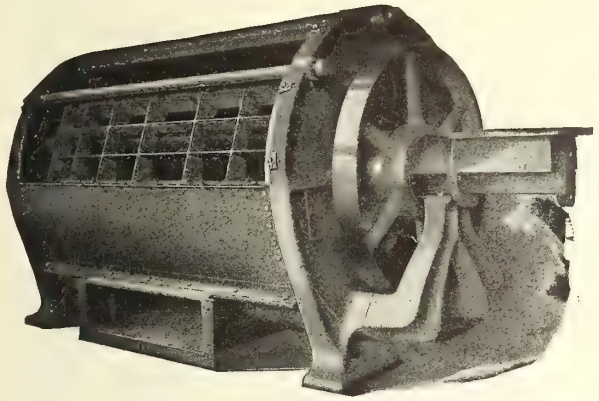
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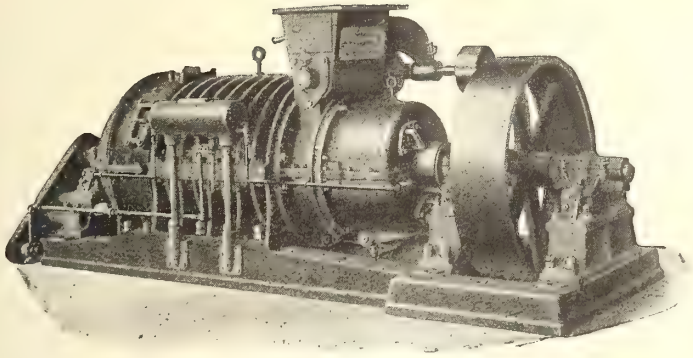


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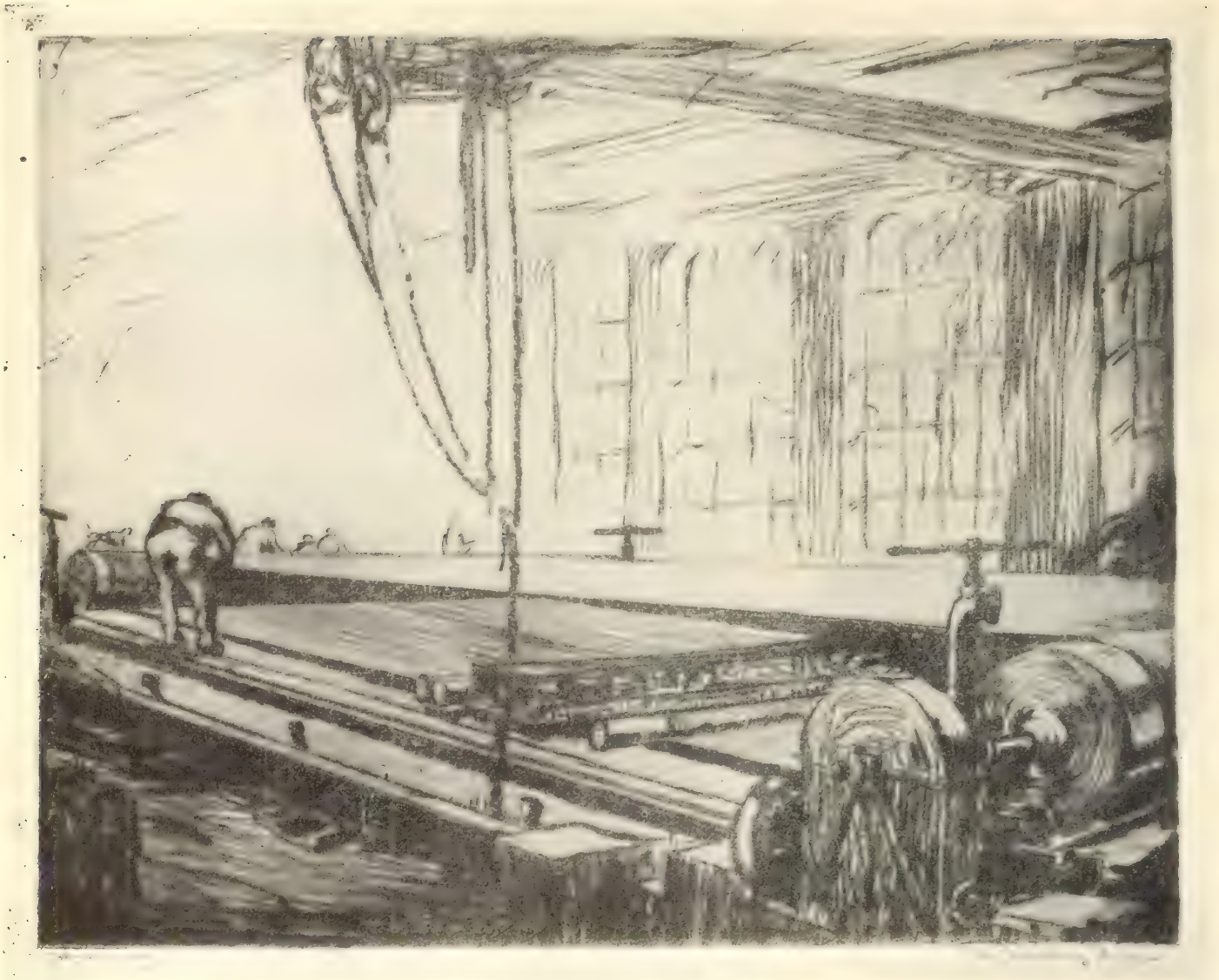


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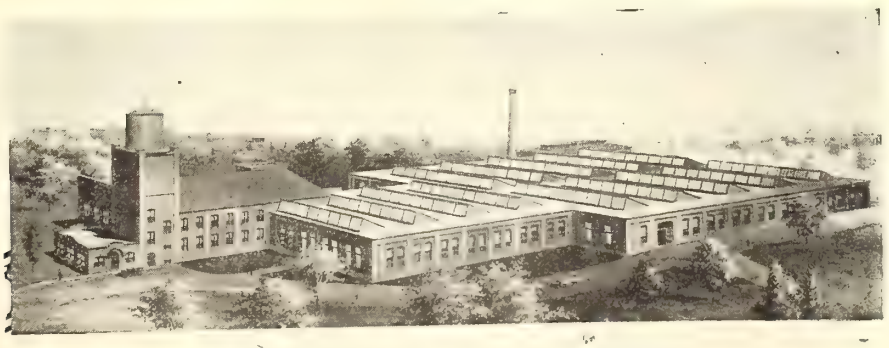


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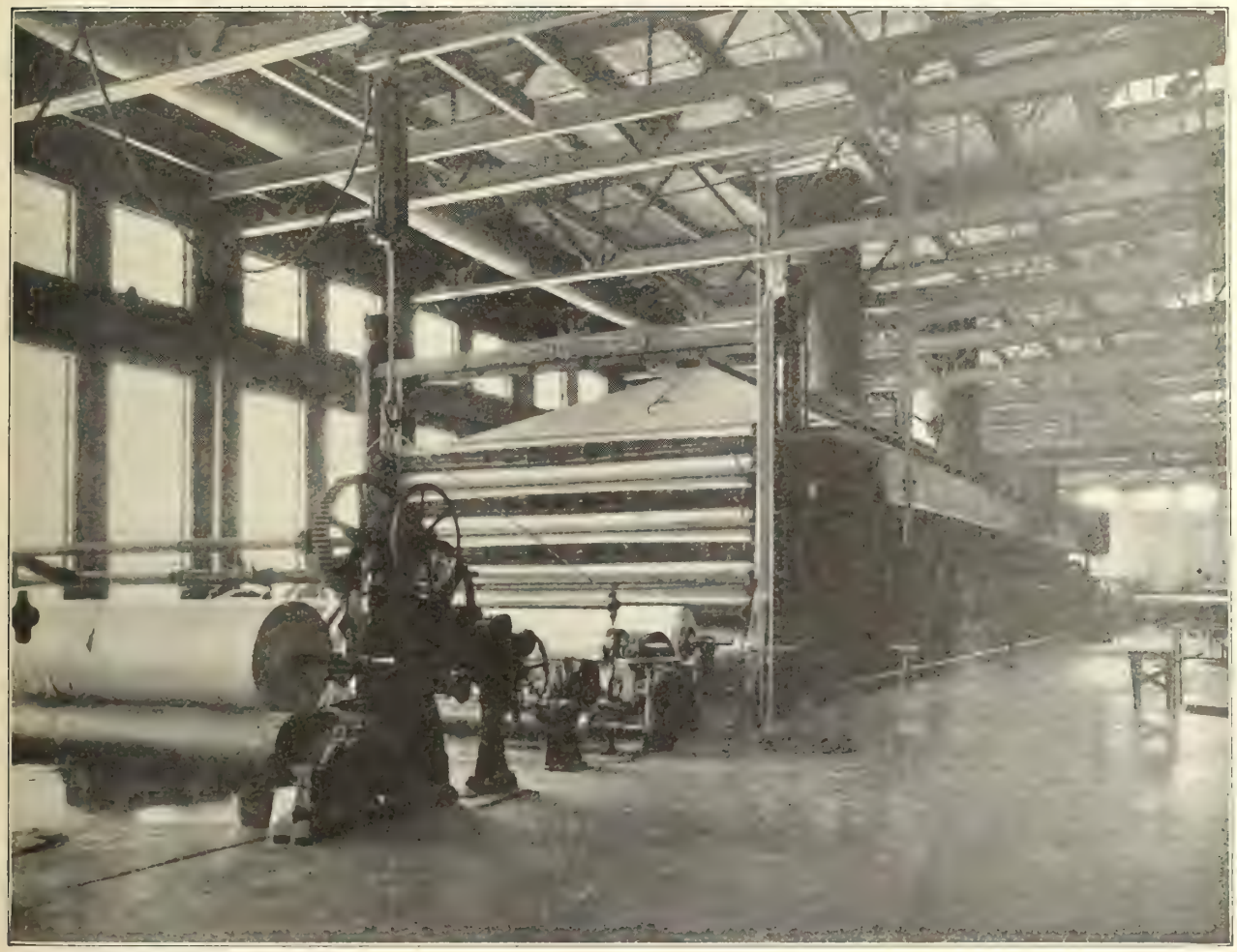
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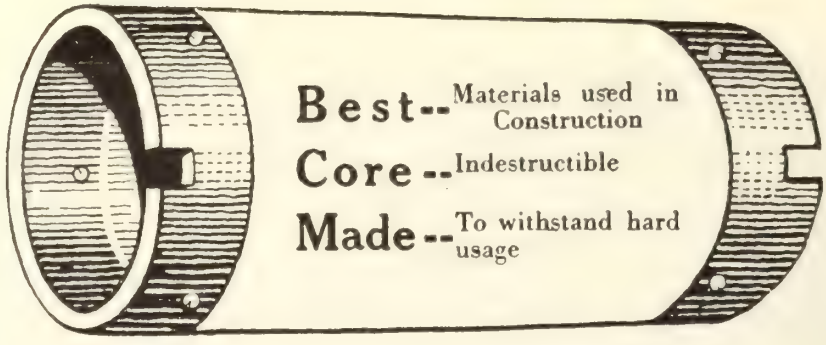
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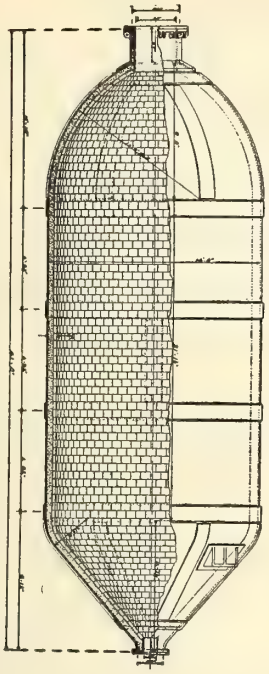


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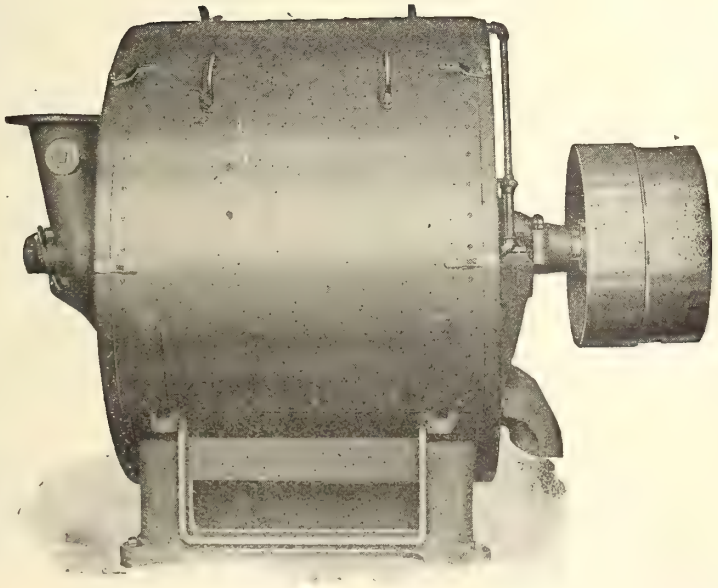
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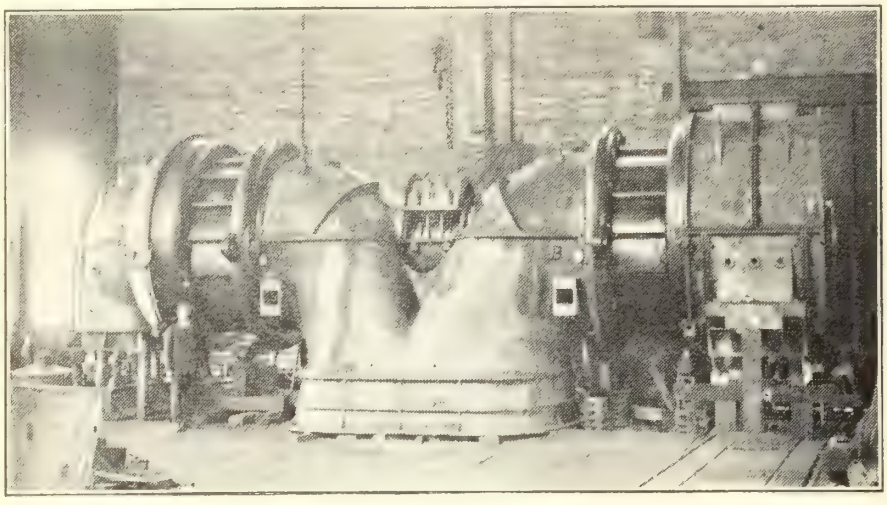
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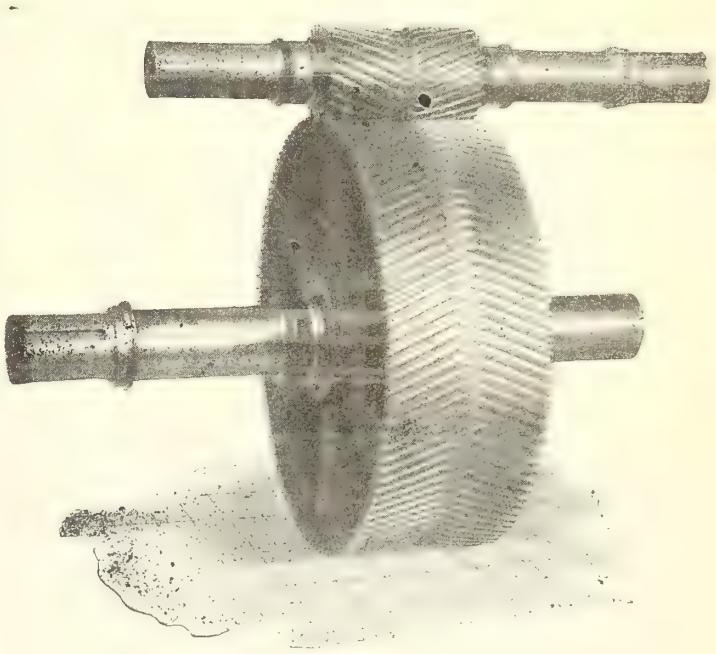
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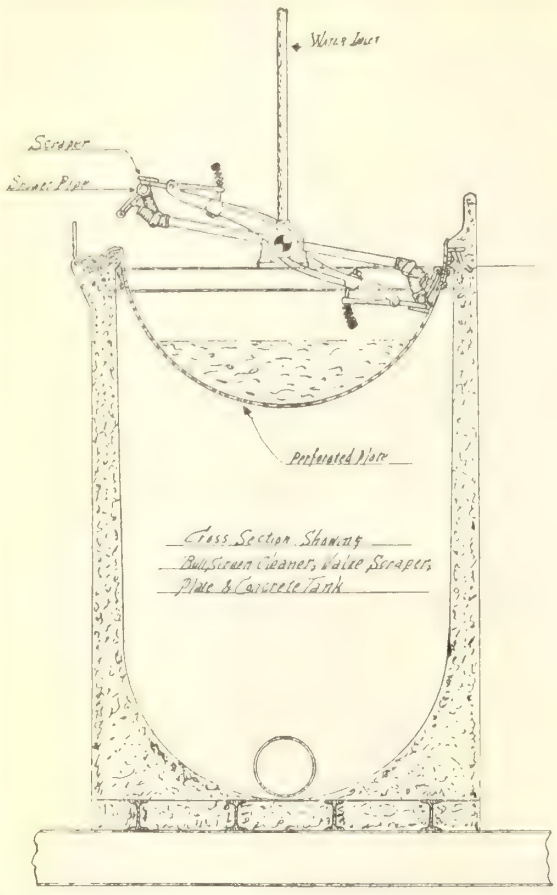
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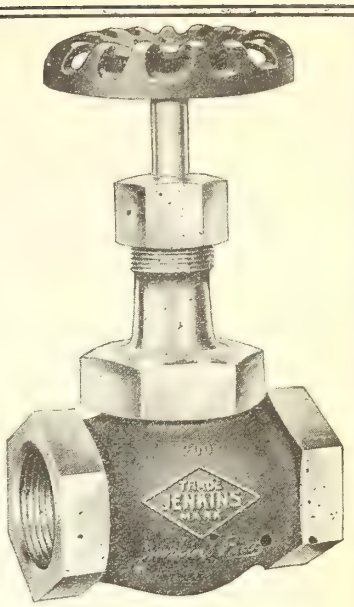
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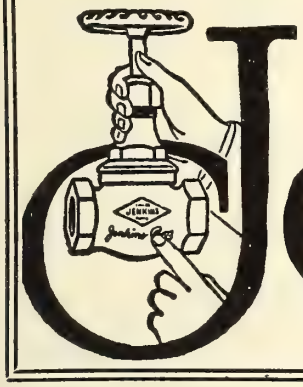
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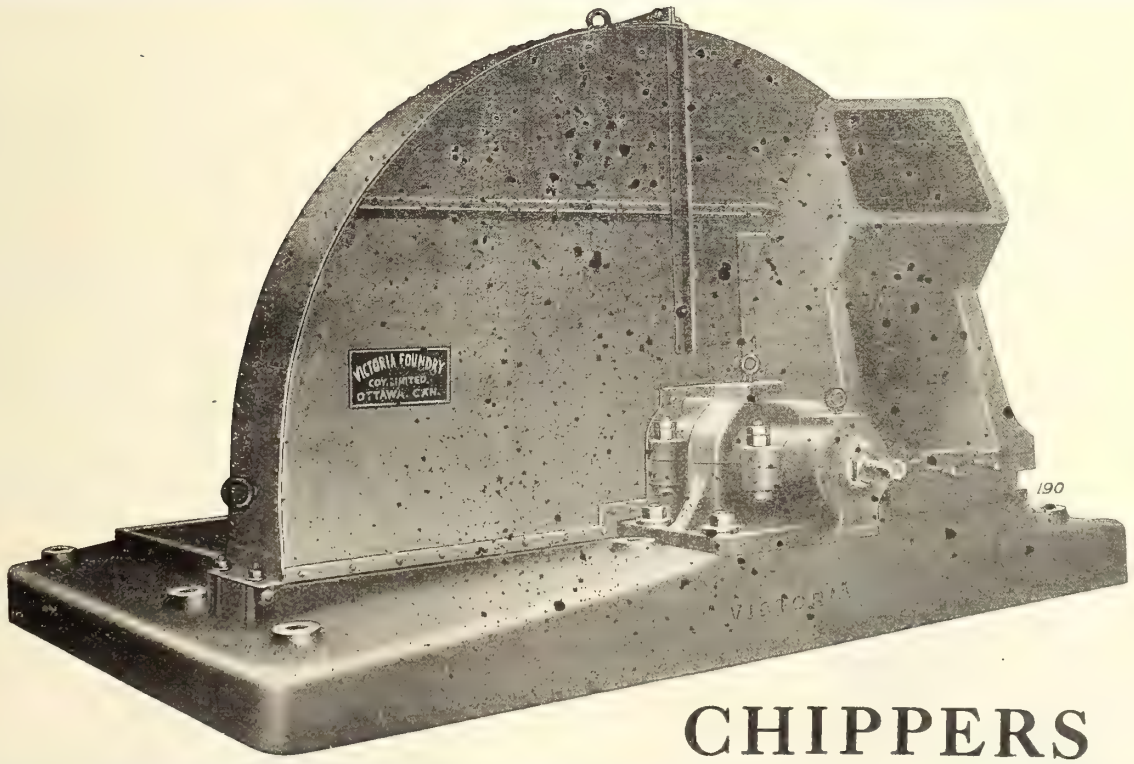
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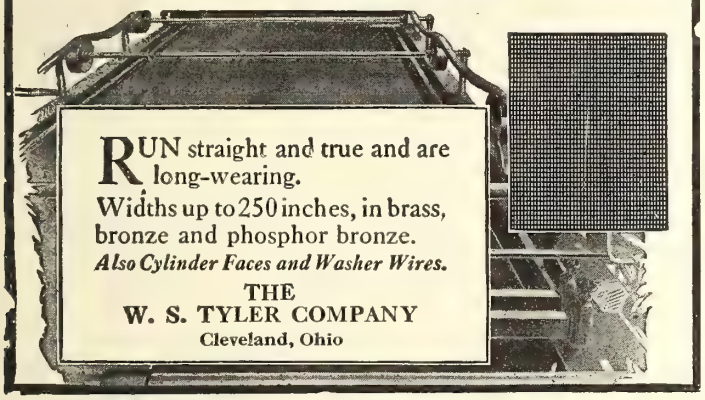
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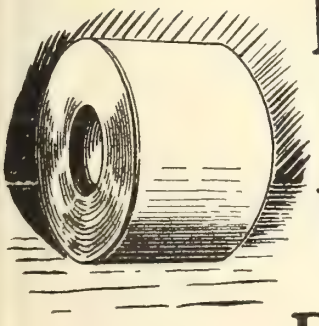




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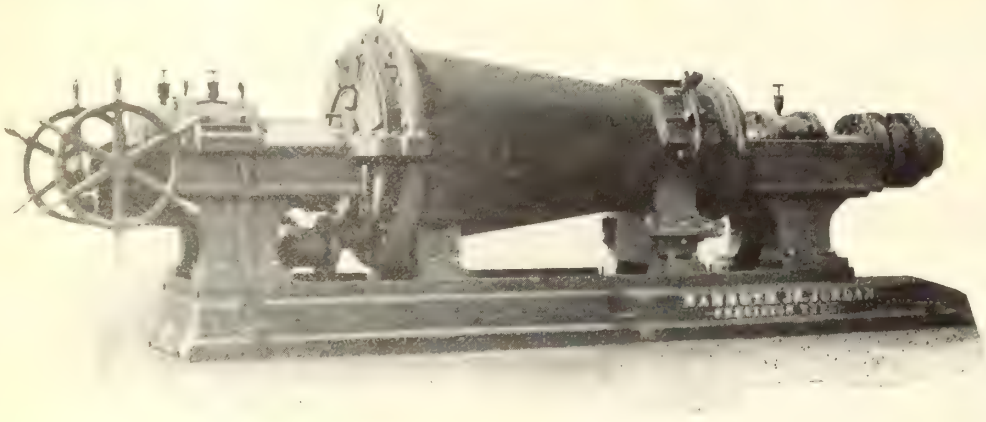
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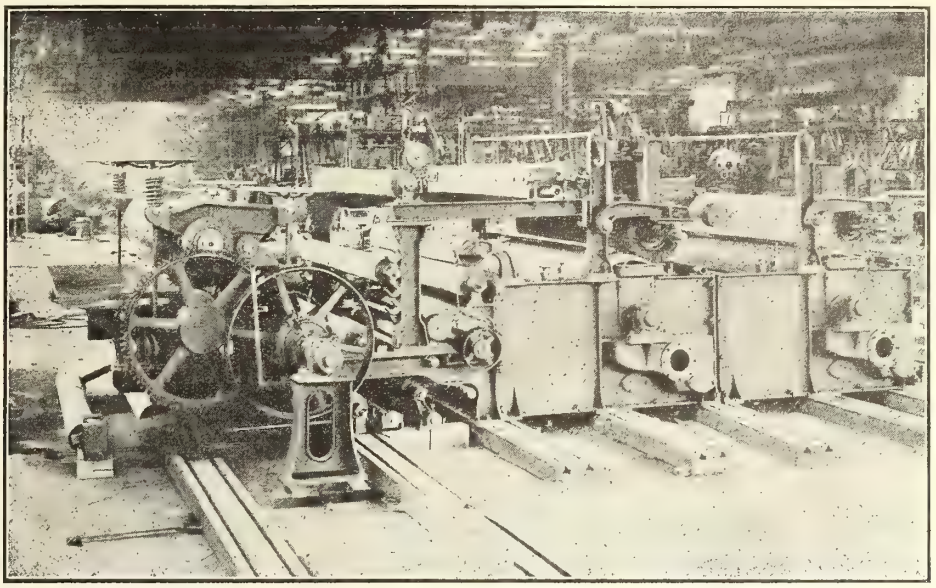
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VOL. XXI. Gardenvale, Que., May 17th., 1923 **No. 20**

TABLE OF CONTENTS

Editorial:

Concerning the budget 499
Plenty of eggs; too few basket 500

Special articles:

The place of chemistry in business 501
A new all-electric paper mill 505
Imports of paper, pulp and cardboard into Brazil 512
Commissioner Egan on South Africa 513

Miscelaneous Informations:

Enough is plenty 500
Machine room of Westminster Paper Mills. 503
Thickness and weight indicator 504
Link-Belt Company's new book 508
Review of recent literature 511
Safety on the street 514
Odorless manufacture of chemical pulp. . . . 514
Printing in Asia (book review) 514
Labor organization in Canada, 1922 516

News of the Industry:

Progress with Chemical Exposition 503
Bamboo cutting in Kenya Colony 503
May build board mill 504
Hays has consulting service 504
News from abroad 509
Pulp and paper news 515
Spanish River third biggest 516
New Brunswick news 516
United States notes 517
Paper exports to Australia 517

The Woodlands Section:

A timely appeal 510
Chicago interests in B. C. pulp field 510
Sir Clifford Sifton on replacing forests . . . 510
A poor excuse but a witty one 510
1,500 forest rangers for Quebec 510

The markets:

Canadian trade conditions 518
New York markets 519

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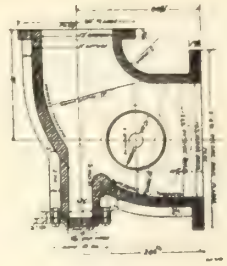
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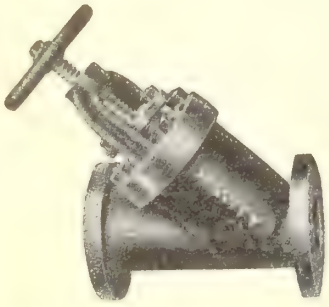
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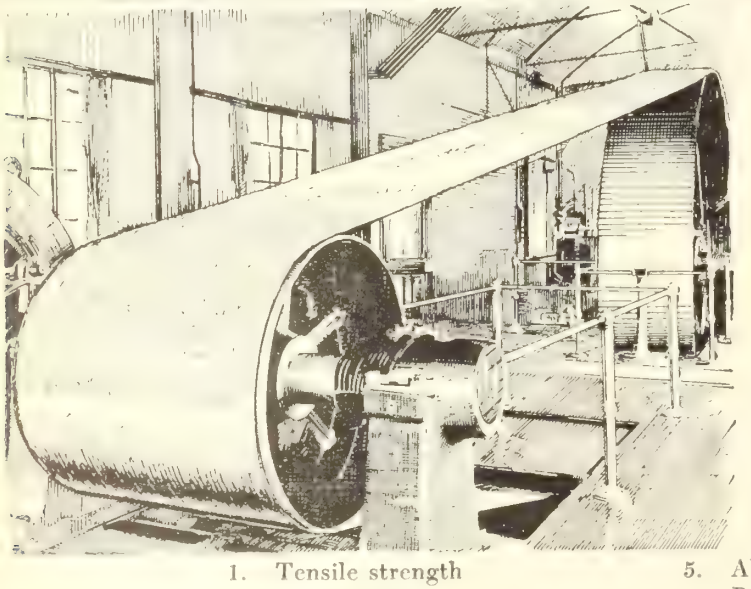
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:-: EDITORIAL :-:

CONCERNING THE BUDGET

The Budget, brought down last week by the Hon. W. S. Fielding, Minister of Finance, contains several points of interest to the pulp and paper industry. These include tariff duties on paper, and the pulpwood problem.

The proposal to drop the duty on newsprint may be considered largely a matter of reciprocal courtesy to the United States, which admits Canadian newsprint free of duty. As for the decrease of 10 per cent in the amount otherwise payable by way of duty on British goods, already given preferential treatment, we can see neither political nor economic reason. We are not interested in election promises, but we are interested in keeping Canadian workmen employed, so that they can purchase for their needs, whether the goods be domestic or imported. It remains a bit of a question whether the import of foreign goods, in competition with Canadian, needs further encouragement. It seems that a fair amount of English machinery, textiles, paper, etc., is coming in now and that the reason we do not import more is because of convenience rather than price. Where the English product is sufficiently superior for a certain purpose the matter of about 3 per cent. in the price is not a prohibitive factor, but where there is keen competition, and 3 per cent. takes business away from a Canadian mill that could produce the goods, we have something different again.

In regard to Australia, we have quite a different situation. There it appears to require preferential consideration of goods that can be brought in from that part of the Empire, in order to implement the sale of Canadian goods under preferential conditions such as are provided for similar goods made elsewhere under the Union Jack.

On economic grounds, we can see no reason for lowering tariffs. The plain situation with regard to our National finances is — we need the money. The country is enjoying a fair measure of prosperity, but an inducement to spend the results abroad will not greatly assist in keeping the home fires burning; the increase in export business, because of the possible increase in imports will not cause any great amount of overtime work in our mills and factories or on our farms. We must, of course, do enough business abroad so others can afford to, and will want to buy from us, but there is a limit to the inducements necessary. The Budget doesn't balance.

With regard to the pulpwood problem, Mr. Fielding, in presenting the Budget, said:

"Forest conservation had engaged the attention of the House a great deal. Where a country had a lavish supply of timber, it was expected that people would be apt to become careless of it, and those who viewed the situation with alarm had asked the Government to go as far as to prohibit the export of wood. Where the provinces controlled the land they could take their own measures. There were, however, a number of private interests which owned large timber lands, and such interests felt that they were fully entitled to market their product to the best advantage anywhere in the world. It had, therefore, been decided to name suitable persons to inquire fully into this matter during the coming recess, in order that the Government might come to a well-advised conclusion as to the necessary steps to be taken."

This announcement is encouraging. It shows that the Government is alive to the urgency of the situation and is going to take counsel before deciding on a definite course where a number of conflicting interests are involved. The outstanding reality in the matter is the fact that raw pulpwood is being exported to the detriment of Canadian mills, both by cutting into their own dwindling reserves and by furnishing fodder to their competitors. This export of raw wood also encourages excessive cutting of farm wood lots, of bogus settlement for the purpose of skinning the timber, and does not contribute in proportion to its value to the conservation and protection of our forest lands. Promise of action in this matter by the Minister of Finance puts a more hopeful aspect on the situation and must be a source of gratification to Mr. Frank Barnjum, who has been untiring in his efforts to arouse the Canadian people to the seriousness of the outlook for industries dependent on the forest if the happy-go-lucky policy of the past is allowed longer to continue.

But there is the possibility, on the other hand, that the idea of appointing a commission is merely a means of "passing the buck." Not only foresters, but prominent politicians also, have expressed themselves as in favor of more stringent measures for the insurance of wood supply for Canadian mills. When such measures might also furnish a source of income, it is surprising that a definite scheme has not been included in the Budget. The findings of the commission will depend on its members, and where their treasure is.

PLENTY OF EGGS; TOO FEW BASKETS

The development of Canada's natural resources in relation to foreign trade is dealt with by the Natural Resources Intelligence Service of the Department of the Interior. The object of the statement is to show that our foreign trade rests on too narrow a basis, and that our commercial progress is apt to be retarded unless we can bring into operation new resources on a more extended scale. The statement points out that our expansion during the last twenty-five years has been due mainly to grain and wood products, and that these contribute more than half of the total value of the Dominion's sales abroad. There is however a limit to the demand of these commodities, and a wider range of natural resources will have to be utilised if Canada is to maintain her place as an exporting nation.

The pulp and paper industry is vitally interested in export trade, as this is the foundation of the industry, particularly of the newsprint section. Without orders from foreign countries, and especially from the United States, newsprint mills could not exist, but if Canada is to retain that hold on the American market we must not shut our eyes to the possibilities of our supplies of raw material being seriously depleted. Reference is made to this by the Statement in the following words: — "In the case of the pulp and paper industry there appears to be little or no commercial check upon the progress of development, but according to the Federal Department of the Interior, we are approaching a condition in certain provinces which raises the question as to how large an annual cut our forests can sustain."

It is obvious that we are making great inroads on our pulpwood resources, and that the extension of existing mills and the construction of new plants will involve much greater demands on these resources. As we have before pointed out, there is urgent need for measures to conserve our pulpwood resources, in order to ensure a permanent supply. While the danger of depletion is widely recognized, there has been no co-operative effort to speak of in the direction of finding a remedy.

Leaving that on one side the question of prohibiting all export of pulpwood, concerning which Mr. Fielding has promised an inquiry, and the subject of reforestation, there are other fields which offer opportunities to conserve our natural resources. For instance, the measures to prevent forest fires are quite inadequate. Year after year we lose millions of dollars of forest products because of the carelessness of a few people, and because we do not spend enough money in properly protecting the forests. Admittedly progress has been made in educating the public to be more careful; admittedly the Provincial Governments are more alive to the importance of protective work, and admittedly the forest protective associations are more efficient, but the fact that we annually incur such serious losses by fire is sufficient to indicate that the preventive measures are far from being what they should be. It is satisfactory to note that an effort is being made to secure co-operative action by two or three Provincial Governments in the matter of fighting fires at border points and that the force of rangers is being increased in the Province of Quebec. But when will we awake to the fact that we are still a long way off from taking all the necessary precautions?—F. H. D.

COBWEBS

The Squires Government has been returned to power in Newfoundland with a comfortable majority. The issue in the recent election was principally the policy of the Government to guarantee $9,000,000 principal and interest for the establishing of a pulp and paper mill on the Humber River. The British Government has taken this action with respect to the other half of the capital requirements.

The St. Lawrence Paper Mills at Three Rivers started up their second machine last week and will soon be making 120 tons of newsprint per day.

A. Chaplet writes in "La Revue de Chimie Industrielle," page 206, July 1922:

"The solvent and disintegrating power of solvent soaps containing hydrocarbons is used to advantage in the decortication of textile fibers and in the preparation of paper pulps. Flax, hemp, ramie, jute, sisal,...can be thus decorticated in one hour without affecting the fibers in any way. Certain varieties of reeds and of straws, certain leaves with long strong fibers, when treated with hot solutions of kerosene soaps, yield fibers suitable for spinning. Esparto and wood can be thus very cheaply converted into pulp of excellent quality."

Perhaps Canada had better scrap its pulp mills and erect laundries in their place!

ENOUGH IS PLENTY

Most assuredly those mills now erected should be guaranteed ample supplies for present development and generous additions, but none should be given a hundred years' supply, thereby encouraging wasteful bush operations. A limit with forty to fifty years' supply standing should mean permanent cutting under proper management, and that should be insisted upon. — Port Arthur "News Chronicle."

Habits make ruts either for God's chariots or for the devil's wagons.

THE PLACE OF CHEMISTRY IN BUSINESS

By ARTHUR D. LITTLE, Chem. D.
of Arthur D. Little, Inc.

(An address, reprinted from the Technology Review.)

There is in most of us a curious disinclination to have new knowledge forced upon us and until recently the business executive, so far at least as the teachings of science were involved, was little more receptive than the college undergraduate who was out for a place on the football team. To chemists, who, like myself, were trying thirty years ago to preach the gospel or research to militantly skeptical business men, the process of assimilation by them bore a striking resemblance to the forcible feeding of suffragettes. Happily, the situation has greatly changed in recent years to the marked advantage of both business men and chemists. This happy result is due in large measure to two men, the authors of two books, which are, or which ought to be, known to all of you. The first of these men was Dr. Robert Kennedy Duncan, the founder of Mellon Institute of Industrial Research and the author of "The Chemistry of Commerce." The second is our distinguished speaker of the evening, the author of "Creative Chemistry," Dr. Edwin E. Slosson, Editor of Science Service.

I am anxious not to encroach upon Dr. Slosson's preserves this evening, but he will, I feel sure, permit me to bring some brief cumulative evidence in support of his general thesis.

In the mind of the average business man chemistry is something quite apart from business, an abstruse science that deals with things of evil smell and unpronounceable names, something for the laboratory or the underpaid professor, but with which the hard-headed man of affairs has little need to concern himself. Yet you business men, who deal in dollars, think it well worth your while to learn all you can about them. You want to know where they are plentiful and where they are scarce. You follow their purchasing power and the interest rate they carry. You sit up nights trying to advise new ways to put salt on the eagle's tail. You employ bookkeepers and accountants and income tax specialists in order that you may trail these dollars through every portion of your establishment and persuade the Government that a few of them really belong to you. You study balance sheets and audits and inventories, and base your decision upon what they tell you about dollars.

But the dollar is merely a symbol, a generic symbol, of the value of things. The values are in the things the dollars represent, not in the dollars themselves. The things behind the dollar are materials and labor, and labor creates values only as it works upon material. Obviously, therefore, the ways and properties of material or matter are of greater fundamental importance to you as business men than even the properties and ways of dollars.

Now chemistry is the science which deals with the properties of matter and the changes which they undergo. Whether you know it or not, chemistry is, therefore, a partner in your business in a far more real and vital sense than the Federal Trade Commission, the Interstate Commerce Commission, the Tariff Board, the labor unions, the Federal Reserve Bank, or any other of the man-made agencies with which you admittedly have to reckon. As wise business men you take carefully into account freight schedules, city ordinances, insurance regulations; you observe the man-made laws of Legislatures and of Congress. But chemistry has some laws of its own that are not man-made; laws beyond the power of any Legislature or Congress to repeal. What do you know about them, or how far do you take them into account in the conduct of your business? The science of chemistry is simply a codification of these laws and an orderly arrangement of the innumerable facts upon which they are based. The chemist is the counsellor-at-chemical-law, and as such you need him in your business. I suggest that you make an early reservation, as there is only one chemist to each 7000 of our population. An ounce of whiskey in 55 gallons of water is a pretty thin mixture.

The war, which has changed everything, has given a new aspect to chemistry and a fresh impetus to research. Hereafter, the nation which would live must know. Through the wreck and peril of other peoples, Americans have learned with them that research has something more to offer than intellectual satisfaction or material prosperity. It has become a destructive, as well as a creative agency, and in its sinister phase the only weapon with which it may be fought is more research. The organization and intensive prosecution of research has thus become a fundamental and patriotic duty which can neither be ignored nor set aside without imperiling our national existence.

Now we are carrying as cheerfully and hopefully as we may the stupendous burden of the war. Chemistry, with the sympathetic and understanding coöperation of business and financial men like yourselves, can do more to lighten that burden by the creation of new wealth in vast amounts than all the law makers in Congress and State Legislatures. And the first step is to stop the stupid, wicked, childish waste of our basic natural resources. The time has passed for quoting figures. They are of astronomical proportions, anyhow, and make no more impression on the mind than the distances of the fixed stars in light years. The time has come to demand action, to the end that we may pay our bills with what we waste. Let us develop our estate. It has potentials vastly beyond anything we have accomplished.

A very large proportion of industrial problems are problems in applied chemistry. Many of these so-called problems have already been solved somewhere. The present need of industry is not so urgent for new research and for new facts as for the immediate and proper utilization of facts already known and demonstrated.

A few of you may remember that in pre-prohibition days, beer commonly became cloudy when placed on the ice. It was an objectionable tendency which the best skill of the brewers was unable to overcome. A little research by a clever chemist proved that the

cloudiness resulted from the deposition of albuminoids previously in solution. He remembered that pepsin digested albumin, added a trace of pepsin to the beer, and the thing was done. The beer remained bright at any temperature.

Not long ago a Jewish manufacturer was using a leather stain for which he was paying eighty-five cents a gallon. It proved to be water containing a little gum tragacanth and still less aniline dye. He was shown how to make it at a cost of less than ten cents a gallon. He said he began to realize where the Gentiles get the money the Jews get from the Gentiles.

In a plant near Boston using two tons a week of special steel, rolled very thin, the chemist was able in about two years to reduce the cost of this material from eighty to forty cents a pound, at the same time standardizing and greatly improving the quality of the steel. Broken rails are more expensive than analyses, and there are no dividends in broken trolley wires, defective castings, spotted or tendered piece goods, or rejections in any line of manufacture. Competition is difficult when your wastes are your competitor's profit.

Perhaps the greatest domestic problem before the country today is that of transportation. I still guard, not as carefully as formerly, a few shares of the New York, New Haven & Hartford Railroad which I bought at 188. It was going to 200. I doubled up at 70. It is now about 20. And yet a New York banker had the nerve to tell the American Chemical Society at a dinner at the Waldorf that what he required of chemical investments was absolute security. We have lots of things at 30 Charles River Road, Cambridge, that are lead-pipe cinches in comparison with any bank-managed railroad that slides from 188 to 20. I know of one poor little chemical company which started with $20,000 capital and in a few years wrote off $750,000 in real estate and equipment.

However deeply your sympathies may be aroused, you must not let my ownership of a hand car or a water tank on the New Haven blind you to the fact that your business cannot go on without the railroads. You will admit that without argument, but what I want you to realize is that the railroads cannot go on without chemistry. They operate on steel rails, and those rails are cheap because of the Bessemer process of making steel. Few even among railroad men realize how greatly the whole community is in the debt of Dr. Dudley, whose laboratory work went far to standardize the railroad practice of the country. His specifications covered rails, soaps, disinfectants, oils for signals and for lubricating, paints, steel in special forms for every use, car wheels, cement, signal cord, and every detail of equipment. He made the transportation of life and property cheaper, safer, and more expeditious by reason of his application of chemistry to the problems of railroad management.

I would ask you to consider what chance you would have of securing cheap transportation without the Bessemer process, or that of Thomas and Gilchrist which followed for phosphatic ores. What without them would be the value of iron ore lands in this country or that of coking coal? What inducement would Germany have had to go to war if she could not smelt the phosphatic minette ores of Lorraine? Picture, if you will, the opportunities for labor which these processes have created in the mining of coal and iron ore, in the coking of coal, in the making of rails and structural steel and plates for ships. Shopkeepers who never heard his name owe their prosperity to Bessemer, and the cheap Bessemer steel is the foundation of countless industries.

By the way of suggestion, let me point out a few of the more obvious ways in which chemistry can serve the manufacturer.

There is, first, the control of quality of raw material, such as steel, alloys, bearing metals, lubricants, coal, paints, paper, cement, and practically everything else you buy.

Second, perhaps, is the problem of finding suitable substitutes for such supplies as are unobtainable or unduly high in price. For example, there is the use of selenium in place of gold in the production of ruby glass, the substitution of tungsten points for platinum in spark plugs, of silica ware for platinum dishes for the concentration of sulphuric acid, of casein for glue, of chlorate of soda for chlorate of potash in dyeing, of zein (derived from corn) for the prohibited shellac for varnishing confectionery, of specification oils for oils whose value is largely in brand names, and of the specifically indicated chemicals in place of high-priced boiler compounds.

Of even greater importance is the scientific control of processes of production, control of formulas, temperatures, pressures, time and spacing, fineness of material, moisture content, and all the other factors which influence the quality and amount of your daily output. Correlative with such control are the studies having for their object the standardization of your product, the elimination of seconds and rejections, and the profitable utilization of wastes.

No more striking example of the place which research has come to occupy in business has recently appeared than the one, to which John E. Teeple called attention in an address, entitled "Research as a Basis for Credit," delivered last November before the Bankers' Forum in New York. Dr. Teeple said:

"In 1915, there was no potash industry here. We wanted one suddenly and the price of potash was high. In 1918, 44 plants were actually producing potash as a main product (not as a by-product of some other operation). Just one of these 44 plants deliberately organized a research department and kept it constantly at work making a complete and fundamental study of its problems. Today, potash is back to pre-war prices or lower and only one of the 44 plants is operating in competition with French and German potash. This one plant had no particular advantage of location, raw material, patented process, or knowledge of the industry over many others, but its directors had the foresight and its financial backers had the nerve to organize research and put up the money for it month after month in good times and in bad ones. If a banker in 1919 had been asked to pick the one plant out of the 44 that would live, could he have done it with all the facts before him? Not unless he gave due and in this case extreme credit to that fifth basis of credit—Research: organized, unremitting, obstinate research."



Courtesy Industrial Canada

MACHINE ROOM EQUIPMENT OF WESTMINSTER PAPER MILLS, LIMITED

On the left is a view of the 130-inch Beloit "Yankee" machine and on the right the 66-inch Beloit crepe machine. These photographs were taken on December 22, 1922, about one hour before the first paper came off the machine. The Company are a new industry for Western Canada

J. J. Herb is president and manager, M. F. Herb,vice-president, H. M. Lord, secretary-treasurer, and R. F. Arnett, assistant sales manager.

Bankers and capitalists should thus realize, as they doubtless do, that the basis of credit for industrial enterprises has shifted. Past earnings have lost their significance. Audits and inventories and balance sheets tell the story of past performance. What is now required is the assurance of future earning power. That assurance can be safely based only on technical studies covering raw material supply, the adequacy of equipment, the relation of processes and methods to the best modern practice, the efficiency with which energy and material are utilized, and the status of the product in the market under the new industrial and economic conditions. Now is the time to put our house in order, to sweep out wastes and inefficiencies, to study and solve our problems, to make ourselves worthy of and ready for a sounder and broader prosperity than our country has yet known. Let us go to it.

PROGRESS WITH THE CHEMICAL EXPOSITION

In order to secure from the various companies who will exhibit at the Ninth National Exposition of Chemical Industries which will be held at the Grand Central Palace, New York, during the week of Sept. 17 to 22, inclusive, the industries which they are most desirous of reaching through their exhibits, a questionaire has been sent out by the Exposition management. Based on the expressions of opinion by the majority of exhibitors, the final plans for the 1923 Exposition will be laid. According to types of visitors most desired, appeals will be laid on features of the program designed to attract them to the Exposition. By deliberately planning the appeal to interest along well defined channels, the management of the Exposition expects to bring materially larger proportions of the buying power of the chemical and equipment consuming industries than in previous years.

If the home does not train the child to know God and to serve him, the chances are all against the child's ever knowing him or serving him.

BAMBOO CUTTING RIGHTS FOR PAPER-PULP IN KENYA COLONY

(From Commercial Intelligence Journal.)

Tenders are invited by the Government of Kenya for two areas of bamboo forest estimated to produce 60,000 tons of pulp per annum; the basis of tender will be a royalty payment per ton of air-dry pulp commencing five years after the issue of the license. No tender of less than 2s. a ton will be accepted. The successful tenders will be granted licenses under the Forest Ordinance, 1911, for a period of twenty years, with options for renewal for further periods of twenty years on terms to be agreed between the Conservator of Forests and licensees. Tenders must be forwarded to the Conservator of Forests, Nairobi, Kenya Colony, on or before July 1, 1923, and should be marked on the outside of the envolope, "Tender for Bamboo." Further particulars, including a pamphlet embodying the results of experiments conducted in Kenya, and of measurements taken in the bamboo forests, may be seen at the office of the Crown Agents for the Colonies, 4 Millbank, London, S.W.1.

The Hamilton Cove Pulpwood and Lumber Company, Limited, has been incorporated with a Quebec charter. The powers include carrying on business as manufacturers, dealers, importers and exporters of pulpwood, paper, and lumber, and also vendors of electric light in the Counties of Chicoutimi and Saguenay. Mr. D. H. Pennington, lumber merchant of Quebec, is interested. The capital is $150,000 and the head office in Quebec City.

The Rolland Paper Co., Limited, Montreal have issued a very neat advertising folder in red and black, entitled "40 Years of Untarnished Record". The folder states in part: "For 40 years Rolland Paper Co. Limited, has been making Superfine Linen Record. During that time the quality has not deviated once from its standard — best all-rag, loft-dried bond paper that it is possible to make".

THICKNESS AND WEIGHT INDICATOR

Mr. Frank Lang, of the Ontario Paper Co. writes as follows, and is to be congratulated on the results of his inventive effort.

I am taking the liberty of enclosing a short description of a recently developed automatic thickness and weight indicator for use in paper machines, I enclose a chart obtained with this device, now being in continuous operation on a board machine, which runs on sulphite and ground wood tailings, and would kindly ask you to publish this in the technical section of your valuable paper, as I feel confident that mill managers and superintendents will find this thing very interesting.

It is common practice in every up to date paper mill, to test the sheet for weight and bulk or thickness, and up till the present time to obtain this, a sample had to be taken by a man in attendance, and the sample weighed and calipered. In the physical testing of paper there is a definite range set for weight and thickness, called the "tolerance limit." This testing is very important for the paper maker, as there are several factors tending to change the sheet from the time it leaves the flowbox in a liquid state, until it is rolled up into reels at the winder.

It is easily understood the more samples are taken, the better informed the machine tender will be as to the condition of his sheet and so be able to control same more efficiently. Uniformity is economy. On the other hand, taking samples too often will considerably increase the percentage of broke in one finished reel.

Carrying in mind this strict physical control, after several months of experimenting, we completed a simple and effective little device giving us a continuous test, thus we know just what our sheet is, going to the reels, and these tests are continually recorded on a Bristol gage 24-hour chart, thereby doing away the constant tearing of samples to obtain the required tests. If the line described by the pen is straight, the sheet is uniform. If it swings one way or the other the weight, the bulk, also the finish have changed. Besides it will record all breaks on the machine, and the amount of time lost due to these breaks.

The device is constructed in such a way as to allow an easy installation on any make of paper machine and the gage may be set at any convenient or desired place in the machine room. The indicator gage will in no way interfere with the operations of the paper machine.

MAY BUILD BOARD MILL

General Manager E. Newell, of the Dominion Envelope and Carton Company, Limited, Toronto, is expected back from England shortly when it is expected that a definite announcement concerning the proposed building of a board mill by the company will be made. It is understood that partial arrangements for financing the enterprise have been made and that English, American and Canadian capital will be employed. It is stated that Mr. Newell has the authorization of his company to proceed with the project providing satisfactory financial arrangements are consummated and that a site is already in mind adjacent to Toronto.

HAYS HAS CONSULTING SERVICE

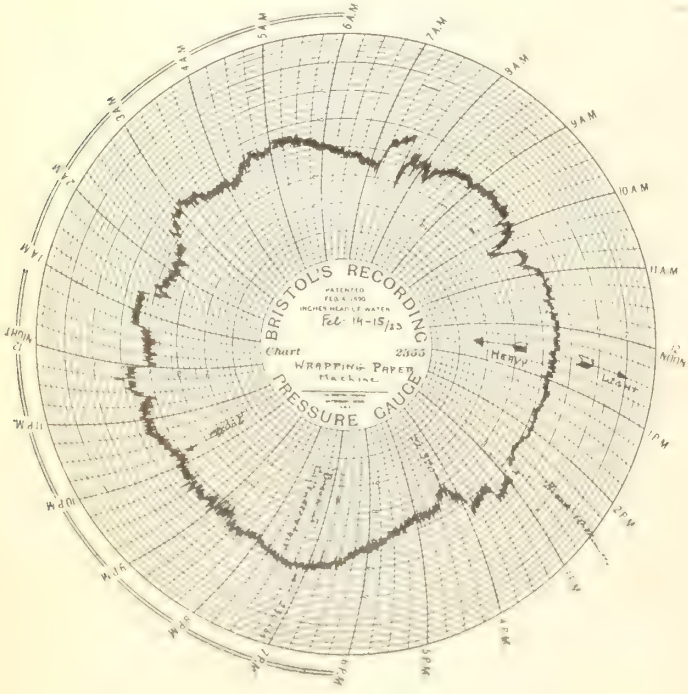
Mr. Jos. W. Hays is just completing the organization of a corps of consulting combustion engineers to be known as JOS. W. HAYS and ASSOCIATES. The headquarters of the organization will be Michigan City, Indiana.

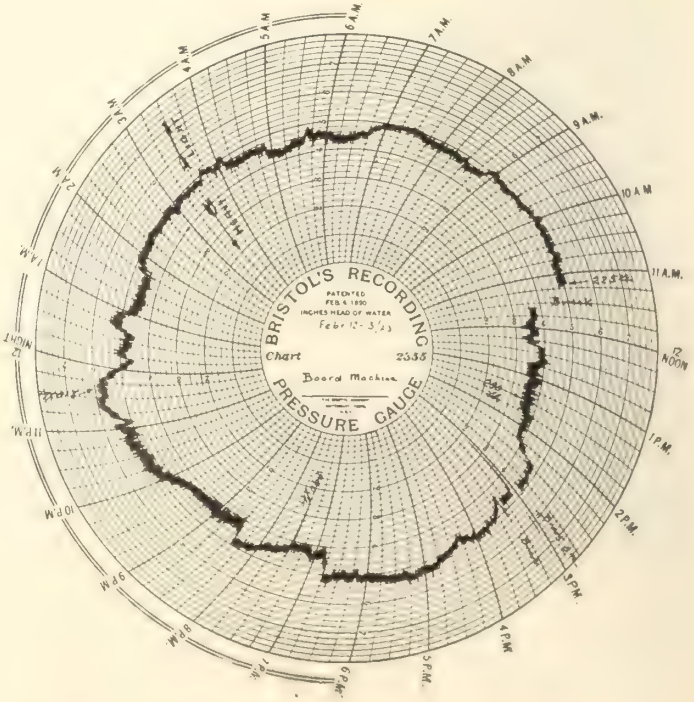
Mr. Hays has been finding it impossible for some time past to meet all of the demands upon his time, and for this reason is forming the organization.

Jos. W. Hays and Associates will be prepared to render consulting service in steam plants in all parts of the country. Every man in the organization will be a combustion expert of wide practical experience. No change will be made in the place of residence of any of these Associates. Each member of the organization will look after the engineering work in his immediate territory.

All communications should be addressed to JOS. W. HAYS and ASSOCIATES, Michigan City, Indiana.

We do not know how cheap and how fruitful the seeds of happiness are, or we would scatter them oftener.





A NEW ALL-ELECTRIC PAPER MILL

By A. H. WHITE * and R. H. ROGERS †

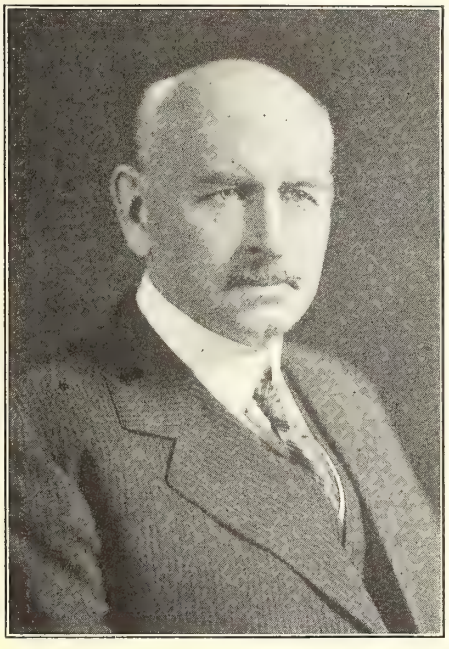
(Continued from last issue)

The pulp after leaving the grinders passes through inclined sliver screens having a large area, leaving the slivers on the surface, from which they are raked by chain-operated scrapers.

A tank holding 96,000 gal. receives the raw stock, together with the return of useful stock from the second screens further down the line. Still more white water is added in the knotter mixing box before the stock goes to the four improved Sherbrooke rotary-screen knotters. Fiber bundles and other overlarge units are washed off the upper inside surface of the drums and pass to the wrapper-machine system, as was the case in the sulphite department.

The stock now flows into long rifflers, which are fitted with submerged baffles to arrest sand from the stones and other heavy impurities. Four improved rotary first screens further refine the stock while they discharge undesirable matter to the second screens for a rescreening.

A battery of thirty deckers thickens the stock by removing all but about one-tenth of the water. This is done by rotating meshed drums partly submerged in the stock. The water runs into the drum and away to the ground-wood white-water tank, while the pulp left on the surface is scraped off and passes to the concrete cavelike ground-wood soft-stock tank, which holds 890,000 gal.



MR. PHILIP T. DODGE
President, St. Maurice Lumber Co. Ltd, and International Paper Co.

Waste Water Leaves Mill Practically Clear

The white water extracted from the pulp in both divisions and the overflow from the circulating system in the paper mill proper go to their respective white-water tanks. The sulphite tank gets a great quantity from the paper-mill tank, and the ground-wood white water is augmented by a small quantity from the same source. This water all contains valuable pulp, and both divisions make use of "save-alls" to recover a major portion of it. The ground wood "save-alls" discharge pulp to a "save-all' stock tank, thence to the main soft-stock tank. The water with reduced pulp content passes to the "save-all" white-water tank, thence back into the system by way of the grinders, the sliver screens and the first screens.

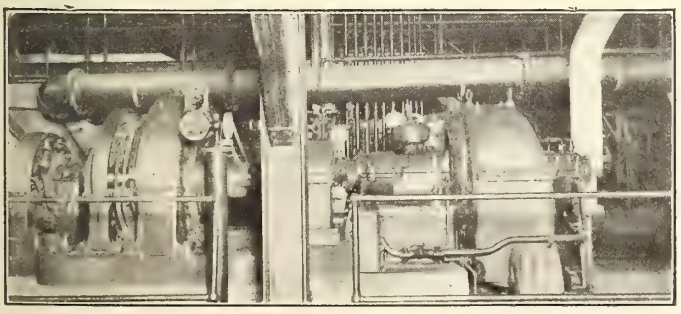
In the sulphite department the "save-alls" discharge the recovered pulp directly to the main soft-stock tank. The reduced white water goes in a small part to the mixing box, to the first and second screens, while the major part goes to the sewer at the rate of about 20,000 tons per day. This is practically the only outlet of any size from the system, and by this time the water is practically free from pulp.

The Two Kinds of Pulp Are Now Mixed

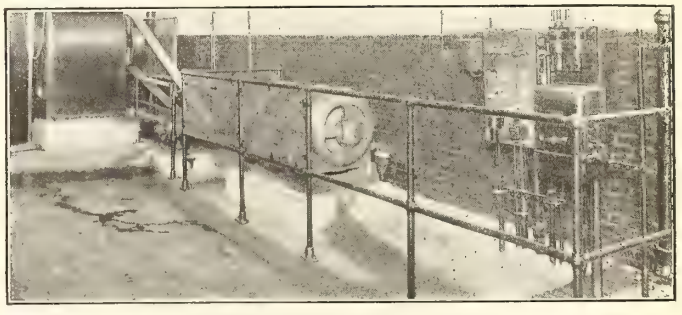
The pulp from both soft-stock tanks as it starts on its way to the mixing system has its consistency regulated by an automatic system which continually samples the flow and admits white water in such quantities as are needed to keep the flow at a uniform consistency of 96.5 per cent water for the sulphite and the same for the ground-wood stock.

The two streams meet in the mixing system, wherein uniform heads are held against adjustable orifices. The heads are automatically held so that the two streams add 25 per cent and 75 per cent, or whatever other proportion is desired, to the whole. Incorporated with this unit are the feeds for the solution of alum and for the blue color. Both the Trimbey and Allen consistency regulators and the mixing system mentioned above are highly ingenious

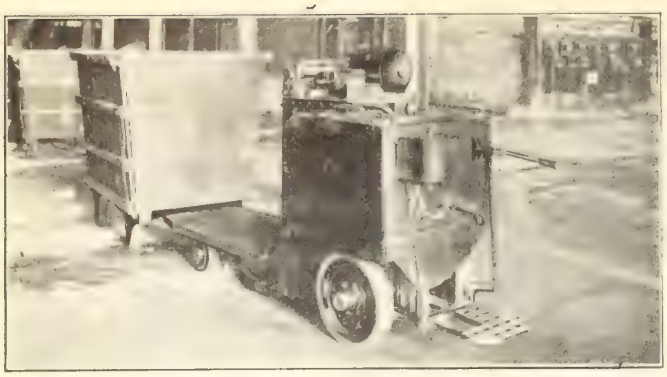
* Chief engineer, International Paper Company.
† Power and Mining Department, General Electric Company.

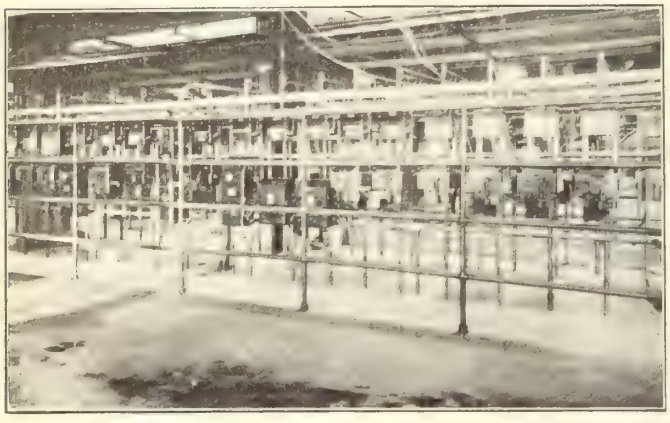


Turbo-Generator Set for Driving Paper-Machine Exhausts Steam for Paper Drying



Motor-Generator Set and Control Units for Rewinder Motor on a Paper Machine



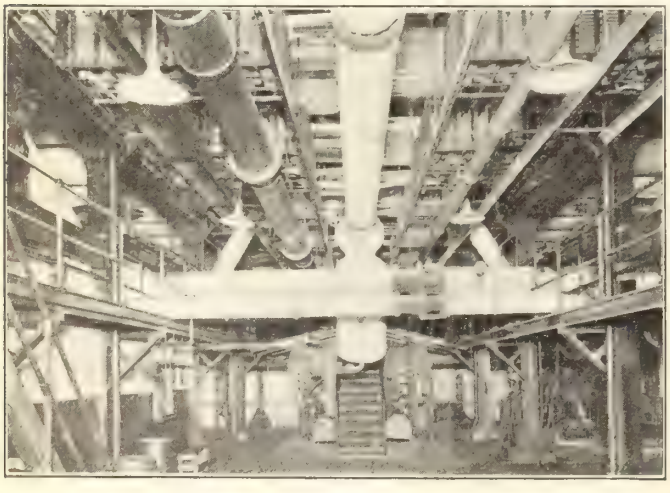


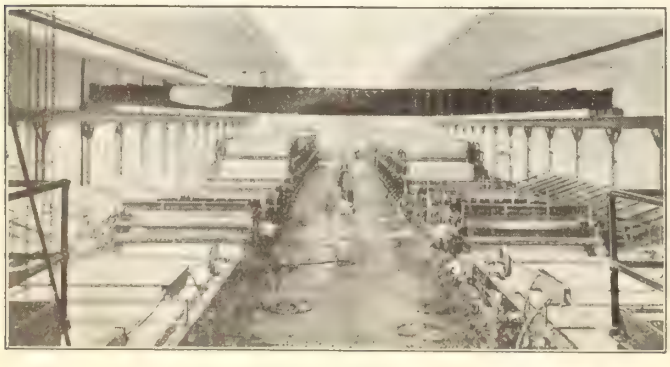
Upper view: A Lakewood elevating electric truck for carrying wet broke to broke beaters.

Second view: Switches and compensators for auxiliaries and paper machine sections.

Third view: Resistors and conduit in basement under dryers. Control panels for turbo-generators in center background.

Lower view: Bagley and Sewell 164 in. paper machines. Control units in center opposite dryers. Both machines making paper at 800 ft. per minute.





machines controlled by continuous-running fractional-horse-power motors whose importance in the general process is much greater than their sizes would indicate.

Another Screening Process Follows

The two machine chests that next receive the "stuff" hold 225,000 gal. From here the stuff is pumped to four constant-level stuff boxes which have return overflows. Next in order are the four mixing boxes, where the 1,600-g.p.m. flow is boosted to 14,000 g.p.m. by the circulating white water, about 64,000 tons being passed through the four machines every twenty-four hours. Each paper machine is preceded by three inward-flow rotating Bird screens which remove the last traces of undesirable matter and thoroughly agitate the fibers to insure a uniform quality of paper.

The tailings from the Bird screens go to second screens, where the rejected material is removed by hand and the material passed goes back to the paper machines.

The four Bagley & Sewell 164-in. paper machines are placed side by side in the machine room, which is 175 ft. wide and 320 ft. long. They are driven by the General Electric Company's sectionalized electric drive, using direct-current motors which take their current from a turbine-generator for each paper machine.

Paper Machines Have Sectional Drive

One paper machine is made up of nine independent sections, which, however, are intimately related as to speeds in linear feet per minute. These speeds, though slightly different for each section, are required to be maintained in precise adjustment in order to produce an unbroken sheet of uniform quality. At a speed of 800 ft. per minute the "stuff", 99½ per cent water, is converted into specification paper containing 10 per

Table IV (Continued)

Rechipper, blower and log splitter:	
Belts; one 25-h.p., 860-r.p.m., squirrel-cage.	C. W.
Chipper-knife grinder:	
Belts; one 3-h.p., 1,710-r.p.m., squirrel-cage.	Cr. W h.†

*Canadian Westinghouse. †Crocker-Wheeler.

TABLE V—ELECTRIC MOTOR DRIVES IN DIGESTER AND ACID BUILDINGS

(Total connected load, 217.5 h.p.; 550 volts alternating current.)

Chip conveyors from chipper building:	
Gears; 10-h.p., 570-r.p.m., squirrel-cage.	C. W. *
Chip bucket elevator to chip bin:	
Gears; 35-h.p., 860-r.p.m., wound rotor.	C. W.
Chip conveyor over chip bin:	
Gears; 15-h.p., 900-r.p.m., squirrel-cage.	G. E. †
Two rotary sulphur burners:	
Gears; one 10-h.p., 690-.p.m., squirrel-cage.	C. W.
Gas blower to acid towers:	
Direct; one 10-h.p., 900-r.p.m., wound rotor.	G. E.
One 2½-in. 250 g.p.m., 110-ft.-head water to acid towers:	
Direct; one 15-h.p., 1,800-r.p.m., squirrel-cage	G. E.
One 2½-in. 250-g.p.m., 110-ft.-head pump, acid to acid towers:	
Direct; one 15-h.p., 1,800-r.p.m., squirrel-cage.	G. E.
Two 2½-in., 250-g.p.m., 50-ft.-head pump, acid to storage:	
Direct; two 7½-h.p., 1,800-r.p.m., squirrel-cage.	G. E.
Two 8-in., 1,600-g.p.m., 65-ft.-head pumps, acid to digester:	
Direct; two 40-h.p., 1,800-r.p.m., squirrel-cage.	G. E.
Acid tower elevator:	
Geared; one 10-h.p., 900-r.p.m., wound rotor.	O. E. ‡
Digester building elevator:	
Geared; one 10-h.p., 900-r.p.m., wound rotor.	O. E. ‡
Ventilating fans:	
Three 5-h.p., 1,800-r.p.m., squirrel-cage.	C. W

*Canadian Westinghouse. †General Electric ‡Otis Fenson. ‖Otis Elevator.

cent water in forty-five seconds. It is a race between the water content on the one hand and gravity, suction, pressure and heat on the other hand.

The first section is the Fourdrinier wire, an endless belt of fine brass mesh the width of the machine. It runs around two rolls about 50 ft. apart, one of which, the couch roll, is driven by a directly connected motor. The upper surface of the "wire" is supported by a number of small table rolls, and near the couch roll and inside of the couch roll as well are installed a number of suction boxes extending the entire width in which a vacuum of 10 in. to 16 in. of mercury is maintained.

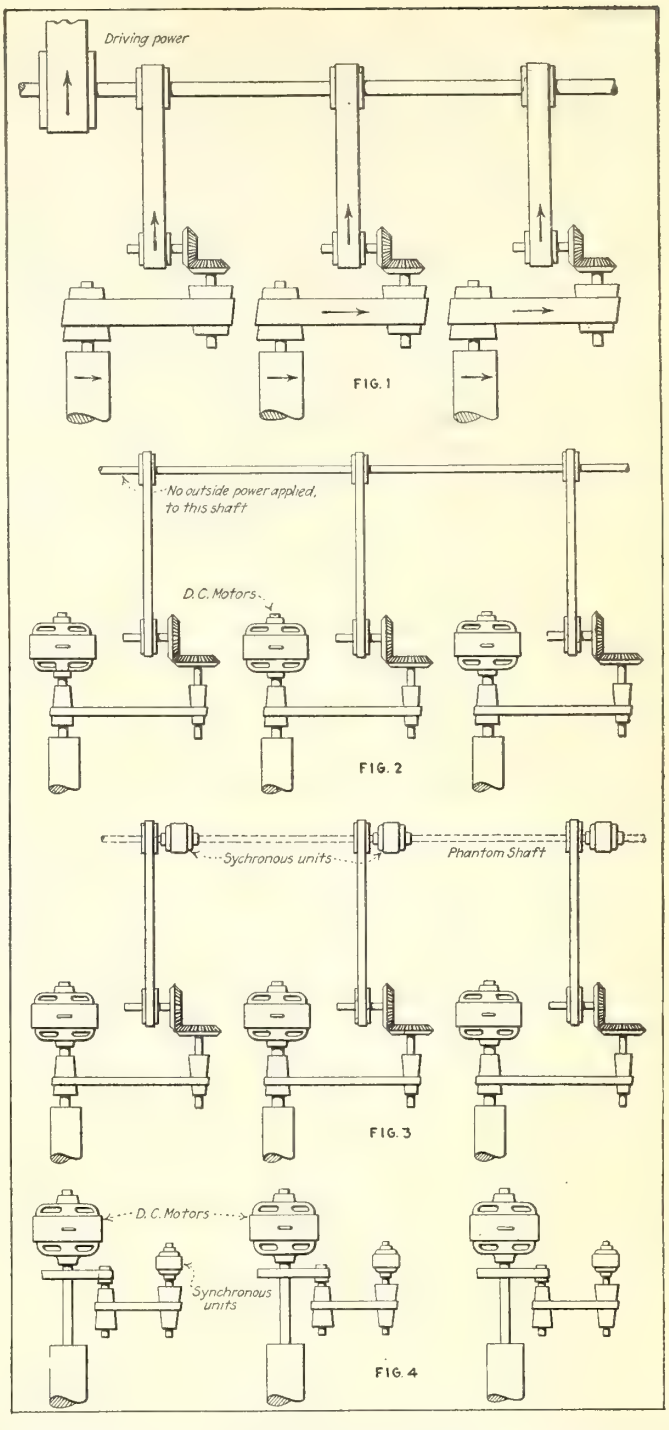
A uniform stream of stock about $\frac{5}{8}$ in. deep the entire width of the wire belt is poured on with a velocity practically equal to that of the wire. During the three seconds that elapses while passing to the couch roll the greater part of the water falls through the wire mesh and the fibers are left in a felted sheet, which is further compacted by the forcible extraction of water as it passes over the suction boxes.

At the couch roll the deposited fibers have become paper. This is still 75 per cent water, but it has sufficient strength to withstand the strain of being peeled from the wire, whence it passes over an open space unsupported to the wool-felt-carrying member of the next section, which is the first press.

It can readily be seen that the speeds of these two sections must be adjusted with microscopic accuracy in order that the delicate web may not be overstretched on the one hand or not be carried away fast enough on the other hand. Through the press sections, of which there are four in series (three in use), each with its motor drive, the paper is carried on wool-felt between rollers under heavy pressure. The top rolls are made of polished granite with the pressure further augmented by compounded levers carrying weights. The bottom roll of the first press is provided with a vacuum box. These presses reduce the water content from 75 per cent to about 66 per cent, during which process the strength of the sheet is very materially increased.

The next unit, by far the largest and heaviest of all, is the dryer section, which consists of forty-four finished revolving cast-iron drums each 5 ft. in diameter by $13\frac{1}{2}$ ft. long and heated by the exhaust steam from the turbine. This steam still holds about 88 per cent of the heat that it contained as it came from the boilers. The drums are all geared together and are fitted with a canvas belt having a total length of more than 600 ft. and as wide as the machine, since it must carry the paper. Means are provided for extracting the condensate from the rolls and returning it for boiler feed. The rate and extent of drying is controlled by adjusting the back pressure on the turbine. This section requires two motor drives on account of the great length of the train of gears.

There is also provided an auxiliary alternating-current drive for this section with a large gear reduction which is used for convenience in starting or for low-speed operation of the drives. The combined weight of all the rolls in this section is 375 tons and the starting duty is very high, principally owing to bearing friction. About 15,000 lb. at 1 ft. radius is required to start the section after a shutdown of a few hours. The mass inertia prolongs the starting load, as the 375 tons of evolving parts are made up almost entirely of

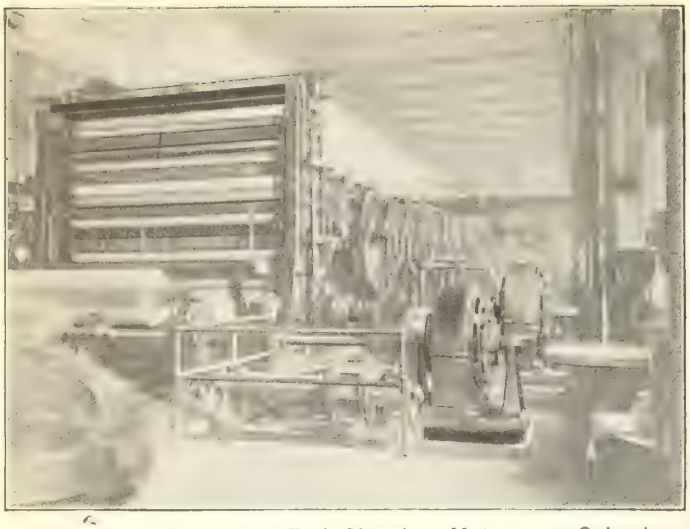


The Evolution of Paper Machine Drive from all Mechanical to Sectionalized Electrical

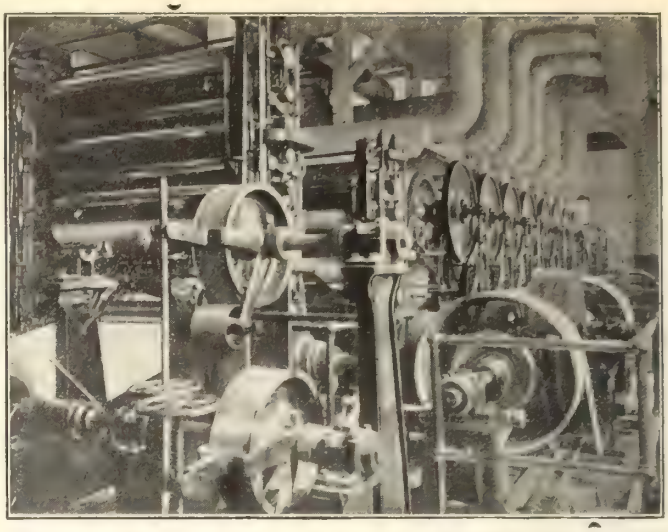
5 ft. drums. The section can be started by the direct-current motors alone by a special switching arrangement which puts the two motor armatures in series, thus relieving the load on the turbine generator. The alternating-current motor for starting and running up to 80 ft. per minute allows for the adjustment and renewal of "felts" or repairs on Sunday without operating the 500-kw. direct-current turbine.

The paper now goes to the calender, which is made up of ten polished steel rolls in a vertical stack, with a 100-hp. motor directly connected to the bottom roll. The paper goes to the top of the stack and passes in and out between the rolls to the bottom where it emerges a bright, smoothly finished sheet of paper.

The reel just beyond the calender rolls up the product into units weighing about $1\frac{1}{2}$ tons. While not



Paper Machine from Dry End Showing Motors on Calender Reel and Rewinder



Wrapper Machine from Dry End Showing Line Shaft Through Cone Pulleys

affecting the nature of the paper, this unit has also to be intimately tied in as to speed with the other sections. The entire course through the paper machine takes about forty-five seconds.

These reels of paper are lifted by means of an electric parallel-motion hoist to stands, from which the paper is run through the slitter, which trims off the edges and slits the paper into two or more parts. The rewinder now rewinds the paper on paper tubes with metal ends that are adapted to the printing presses on which the paper will be used. It is usual to make two 73½ in. rolls, each weighing about 1,400 lb. The rewinder is driven by a 30-hp. motor with speed control by means of a rheostat in the field of an alternating-current-motor-driven direct-current generator in the basement. The trimmings from the sheet and other "broke" resulting from various causes and put through a heater in the basement, which reduces the wet or dry broke to pulp that can be returned to the system at the machine chest.

The commercial rolls are now taken to the finishing room, where they are securely protected by heavy wrapping paper made from the rejections of the sulphite and ground-wood mill.

Sectionalized Paper-Machine Drive an Achievement of Note

Sectionalized motor drive for a paper machine presents one of the most exacting and complex of the thousands of special applications of electric motors to industrial arts.

(a) In order to compete it must use less power, must save space and must cost less to maintain than the conventional mechanical line-shaft drive.

(b) In order to operate successfully it must allow for a wide range of speed in paper production. It must be easily adjusted for "stretch or draw" between the sections and must hold that adjustment unchanged either by creepage or hunting. It must enable the operator to slow down or stop any section without disturbing the others. All its members and attendant control features must be sturdy and self-reliant to operate where inspection is possible only at 160-hour intervals.

All these rigid specifications are met on these machines as they have been on many others.

(To be concluded, with explanation of the operation of the drive, and tables of motor drive details.)

LINK-BELT COMPANY ISSUES NEW BOOK ON ELECTRIC HOISTS

The Link-Belt Company of Chicago and Philadelphia has recently issued a very comprehensive and instructive book on "Electric Hoists and Overhead Cranes". It is not only profusely illustrated with photographs of actual installations showing some of the most recent Link-Belt Electric Hoist applications, but with line and wash drawings, the subject of proper installation and efficient operation is fully covered.

Going further than the usual "catalog", this new book tells, in print and picture, of the practices and methods employed by users in widely divergent fields.

For instance, the practices of a sewer contractor in Maryland, who used a hoist for removing dirt — and the methods employed at a ship building plant in Texas who employed the same means for moving and placing timbers, is illustrative of the wide range of activities covered by this comprehensive book.

Copies of the book, called "Book No. 480", are obtainable from the Link-Belt Company's headquarters in Chicago or Philadelphia, or from any one their many branch offices.

HOW ARE YOU?

"George, how are you?" exclaimed a business man, as a fellow business man entered the office. "Haven't seen you to speak to you for months. Why don't you come around oftener?"

"Why don't you, Jim?"

"Tied down to business, George; that's the only reason."

"Same here. Wouldn't be over now only that I saw in the Banker and Tradesman that you were in a bit of trouble. Came over to see if I could give you a friendly hand."

What a friend was that. Came because his friend was in trouble in the financial world.

No doubt there were others, scores of so-called friends, who shrugged their shoulders when they learned that financial trouble had singled the business man out, the while congratulating themselves that they were not involved, men who had dropped in from time to time, glad to accept the proffered cigar or go to lunch with Jim, but it was George, who rarely had time to come near, who came to the rescue.

It would be a dreary world were it not for "Angeline" and "George." It is such who renew one's faith in humanity. —Ex.

NEWS FROM ABROAD

(A review prepared for Pulp and Paper Magazine by Dr. P. Barthalow)

The Portuguese Wood pulp Market

The market for cellulose and woodpulp is so limited that there is readily no market in the general meaning of the word. All imports are made without the middlemen, for the Portuguese paper mills cover their requirements by direct purchase from foreign producers. This state of things should be of interest to export houses in other countries. There is only one mill which is occupied with the manufacture of pulp from wood. The production of this mill, which only manufactures dry chemical pulp had an output during the years from 1914 to 1920 of the following quantities:

1914	3354 tons	1918	3806 tons
1915	3631 tons	1919	3127 tons
1916	3656 tons	1920	3676 tons
1917	3867 tons		

—Papir Journalen, March 28, 1922.

Dean's "Paper Makers Directory of All Nations" lists Caima Timber Estate & Wood Pulp Co., Estarrija, as manufacturing sulphite pulp with a capacity of 75 tons (dry) per week.

The Paper Industry in India

Norwegian Foreign Office for Trade has published two reports on the condition of the paper market and of paper making in India. The market conditions are generally unfavorable. From January 1, 1922 the market, especially for manufactures, showed an improvement, but this state of betterment did not last. Political factors and the scarcity of money were alike responsible for the conditions in the markets, and purchases are made under the influence of extreme caution, for the political situation is full of risks. Although the visit of the Prince of Wales raised optimistic anticipations, and imports business can be estimated at no more than the normal quantity of goods and that after the taking of the greatest precautions. Pamphlets are published dealing with the striking tendency of workmen in conjunction with others who demand high daily wages. Observers of these strike movements expect action of the men. A money shortage in Bombay has caused the rumor that a large stock of goods is awaiting shipment, and shown the impossibility of transportation, and the Indian import houses complain strongly of this stringency.

Wood Pulp Market in Uruguay

(Norwegian Consular Reports)

Papir-Journalen February 18, 1922.

The two paper mills of the country consume about 1800 to 2000 tons of dry wood pulp a year. The annual consumption of the most important mill, Fabrica National de Papir, is estimated at the present time as follows: Bleached sulphite, 150 tons; strong sulphite, 600 tons; strong sulphate, 400 tons; white mechanical, 200 tons; brown mechanical, 250 tons.

It must be taken into account, however, that during the war, and the year following, the consumption of pulp declined to a considerable extent, since it was found much cheaper to use waste paper, old newsprint, etc. It is therefore evident that the more normal prices will lead to an increased consumption of cellulose and wood pulp. Prices have steadily fallen since September of the preceding year when contracts were closed at the following top prices: Strong sulphite £64. per ton; bleached sulphite £95. per ton; strong sulphate £50.10 per ton; white mechanical £42.10 per ton; brown mechanical £32.10 per ton. All c. i. f. Montevideo.

American and Canadian pulps have for sometime practically disappeared from the market, owing to the inordinately high exchange value of the American dollar (about 150 Uruguayan pesos to two American dollars) which renders deliveries impossible.

Austrian Paper Market

The circumstances of the time have changed all the older concepts; no longer do we allow ourselves to speak of a "market situation". In Austria the market and business position are governed by the rate of exchange. The crown loses value day by day and year by year.

The business of the paper mills, nevertheless, is good. Demand is active in spite of the high prices, which is to be attributed in a great measure to the fact that the home prices are still lower than those in foreign countries. The market in paper goods, clothes, papeteries, etc. is dull, with a marked falling off in business owing to the costs of production, while exports are moderate, owing to the well known restrictions and obstacles. The paper industry as a whole suffers from the business stagnation. A few mills are busy, but since prices on the world's markets have been reached, and partially exceeded, new orders are not coming in. Prices are also fluctuating, so that it is impossible to quote a fixed market price. Costs of production have risen because of the higher prices of raw materials and wages. At the present moment German competition is felt very much, but it is believed that it will become sensibly weaker. However, it is expected that the demands of the workmen will be modified and that with a better exchange value of money, will ensue a slow decline in the prices of paper.

Course in Paper Testing

Christiania. —At the School of Commerce from the middle of March a course of instruction will be held to teach the higher pupils the methods of paper testing. A class composed of exporters and wholesale dealers will also be admitted to the school. The course will cover from 4 to 6 weeks with about 5 hours of work weekly. Instruction includes among other things, microscopical tests, determination of weight, tearing strength, ash content, strength, sizing fastness, fat content, wood pulp content, etc. The course is directed by Mr. Bruff, doctor of engineering chemistry, and will be carried out in the laboratory of the school, with a special equipment of samples, instruments, chemicals and all necessary apparatus.

A continuous course under Director Bruff has also attracted great interest, and is being taken by visiting and foreign scholars during the afternoon hours. Requests for further details should be addressed to Mr. Bruff. —Papir-Journalen, November 3, 1922.

Make it possible, by your straight, clean, kindly lives and Christ-like characters, for those you love to become Christians.

THE WOODLANDS SECTION

A TIMELY APPEAL

Mr. E. J. Zavitz, Provincial forester, begins a circular letter to the editors of Ontario by declaring that "we need your co-operation to help save Ontario's forests from burning."

That appeal should find ready response at the hands of every editor and every newspaper in the Province.

Already millions upon millions of dollars worth of timber and wood has been destroyed, and unless decidedly better care is taken other millions will follow in the frightful waste already recorded.

Every tree destroyed in a Northern forest means loss of revenue to the Province and brings nearer the day when the most drastic measures will have to be taken to prevent the careless starting of fires.

Not just now, but within the next few years every cord of wood standing on stump in the Northern forests will be worth four or five dollars to the people of Ontario.

Less than twenty years ago forest wood was worth about twenty cents per cord. At that time wood could be purchased by mills in the East for five dollars per cord as a maximum price. Similar wood has brought thirty dollars per cord within the past few years, and even now the Eastern mill that can buy wood delivered at eighteen to twenty dollars per cord counts itself in clover.

Our forests constitute the greatest source of revenue the Province has before it. The Government must itself give greater protection, while the individual who is responsible for fire from carelessness should be treated as a criminal.

Arson is punishable by heavy penalty. The man who allows a fire to occur in the forests through negligence or carelessness is a major firebug, for he may be responsible for the loss of hundreds of thousands of dollars of useful wood.

Every class of tree that grows in these Northern forests is valuable, for there is not one not adaptable to the manufacture of some class of paper.

Papers in the East located far from the forests will not realize the necessity for adopting Mr. Zavitz's suggestion as will those of the North country. Neither will the ordinary citizen in the East realize what loss is involved in an extensive forest fire. They must be wakened to the crime of forest burning. The forests are the greatest asset the Province has. They can be made, by proper management, to prevent direct taxation ever being imposed upon the people of Ontario. —Editorial in Port Arthur News-Chronicle.

CHICAGO INTERESTS IN B. C. PULP FIELD

If negotiations which have been going on for nearly a year are concluded satisfactorily, the Seaman Paper Co. and allied interests in Chicago will spend approximately $8,000,000 in the establishment of a pulp and paper mill on the north shore of Burrard Inlet.

E. J. Young, of the Bridingham-Young Lumber Company, of Madison, Wis., is the owner of the timber limits to be used by the Seaman if the deal is settled. Most of the timber limits to be used by the Seaman if the deal is settled. Most of the property is on the North Arm within a few miles of Vancouver. It is estimated that the mill, as planned, will have a capacity of 200 to 300 tons daily.

Power for the big plant may be obtained from the Bridge River Power Company, which has extensive development projects under way in the Lillooet country. Bridge River is reported to have a power capacity of 400,000 horsepower continuously, but only about one quarter of that will be utilized by the company at first. The pulp mill will require about 50,000 horsepower. The Bridge River Power Company has been holding development in abeyance pending the assurance of one big customers, and that role is expected to be filled by the new Seaman mill.

SIR CLIFFORD SIFTON ON REPLACING FORESTS

That the millions of logs taken from the Canadian forests this spring represent a destruction of 'capital' and that the Governments should spend large amounts on restoration without computing costs on an interest basis, is the interesting contention of Sir Clifford Sifton in a letter to the Canadian Forestry Association.

'In my judgment the money spent in planting trees should not under any circumstances be regarded as an investment upon which interest, either simple or compound, should be calculated.

'I regard the cutting down of merchantable trees as a destruction of capital and I would think it was the plain duty of the Government which permits the cutting down of such trees and derives a revenue therefrom, to insist on the replanting of at least two trees for every one cut down and that such cost should be taken out of the forest revenue and regarded as a permanent charge upon that revenue.'

A POOR EXCUSE BUT A WITTY ONE

The diminutive size and slow growth of a plantation of young trees that the British statesman Joseph Chamberlain had set out with much labor were the source of considerable amusement to him and his son Austen. One day, says the Tatler, Chamberlain gave a large party, and his son arrived late.

"You are most unpunctual," said the father reprovingly.

"Yes, I'm sorry," replied the culprit, at a loss for a moment for a suitable excuse. Then his face brightened, and a twinkle came into his eye. "Couldn't possibly get here before father," he said, "I was lost in your new wood!"

1,500 FOREST RANGERS FOR QUEBEC

Quebec, May 11. —It was announced this morning that the number of forest rangers in the province had been increased. Instead of 1,200 men being employed in co-operation by the Government and private firms there will be more than 1,500 forest fire fighters on duty within a few days. The fact that there is still snow in many sections of the country gives rise to the opinion that there will be no serious outbreaks before a fortnight or three weeks.

Technical Section

REVIEW OF RECENT LITERATURE

A — Properties and Testing of Materials

A-11. Paper Filler. U. S. patent 1,424,306. W. Hoskins. Jan. 8, 1922. Powdered calcium sulphate is washed with a solution of soap. Reaction takes place and the sulphate is coated with a superficial coating of an insoluble soap. Other substances, which are only slightly soluble in water and which possess the property of forming insoluble soaps, may also be used for this purpose. The resulting products may be used to good advantage as a size in the manufacture of writing papers.—I. G.

A-11. Loading and Filling Substances and their Retention Properties. Carl C. Schneider. **Paper** 31, No. 11, 32-33 (Jan. 3, 1923). Practical observations on loading and filling materials.—A. P. C.

A-12. Use of Corn Starch in Paper Making. Hans Wrede. **Papierfabr.** 20, 1429-1344 (Oct. 14, 1922); **Paper Ind.** 4, 1368-1371 (Jan. 1923); **Paper** 31, No. 12, 11-14 (Jan. 10, 1923). A general description of the methods of using starch and of its advantages in the following cases: for sizing writing and printing papers, as a filler, for surface sizing, for art printing papers, for coating art papers (along with casein), and as an adhesive in the manufacture of pasteboard.—A. P. C.

A-13. New Method of Measuring Colors. Ismar Ginsberg. **Paper** 31, No. 16, 7-10, 33 (Feb. 7, 1923). An explanation of Ostwald's color theory and of the manner in which it is used for classifying, identifying and measuring colors.—A. P. C.

K — Paper Making and Equipment

K-8. Production of color mixtures containing oils, fats, or waxes in an unsaponified condition for the manufacture of marbled or glazed paper and the like. Ger. patent 367,805. **Papierfabr.** 21, 71 (Feb. 4, 1923). The color mixture containing oils, fats, or waxes and a color is subjected to a very intimate mixing process. —J. P. L.

K-8. The coloring of paper stock color lakes. Emil Heuser and Hans G. Behr. **Papierfabr.**, 21, 1-6 (Jan. 7, 1923). The absorption of acid dyes is approximately the same for loaded paper stock as for stock free from loading material. Basic and substantive dyes, however, are more readily absorbed by loaded stock. With basic dyes, the color is most firmly fixed by magnesium silicate; next in order come calcium silicate and finally aluminum silicate. With substantive dyes the greatest absorption occurs with aluminum silicate; then, in order of their effectiveness, come calcium silicate and magnesium silicate. The silicates were prepared by adding to water glass either aluminum sulphate, calcium chloride, or magnesium sulphate. Acid silicates absorb basic dyes the best. Substantive dyes can be used, however. In general, increased retention of the filler is effected by the choice of the proper dyestuff. Experimental data are given in detail. —J. L. P.

K-10. Degree of Dissociation and Unsaponifiable Matter in Rosin Size. A. Haug. **Wochbl. Papierfabr.** 54, 313-315 (Feb. 3, 1923). The effects of small amounts of different salts of the alkali and alkaline-earth groups on solutions of sodium resinate, at different concentrations, were studied. Solutions of sodium resinate, containing less than 10 grams of rosin per liter, are precipitated by salts at approximately the concentration of 1 gram per liter. Calcium salts have a greater flocculation effect than sodium salts. The effect of hard water on the composition of rosin size is shown. (The concluding article of a series published under this title in **Wochbl. Papierfabr.** 53, 3935-3938 (Nov. 4, 1922); 54, 25-27 (Jan. 6, 1923); 54, 243-245 (Jan. 27, 1923).—J. L. P.

K-10. Simultaneous Coloring and Sizing of Paper Stock. Ger. patents 368,191 and 368,192. **Papierfabr.** 21, 81-82 (Feb. 11, 1923). The soluble or finely divided acids obtained by treating coal with nitric acid, or air and nitric acid, are added to the paper stock. Lake-forming salts or hydroxides are subsequently added to produce the corresponding lakes. The second patent covers the use of all fertilized substances rich in humic acid in place of the coal.—J. L. P.

K-12. Economy of Steam for drying machines. K. L. Thunholm. **Svensk Pappers Tid.** 25, 7 (Apr. 15, 1922); 24 (Apr. 15, 1921). By calculating the quantity of heat for the driers of four Fourdrinier machines two of which were provided with an installation for prewarming and ventilation, the saving of heat, or gain in consumption of steam, amounted to about 39 per cent. The actual consumption of heat per Kg. of paper by the pair of machines provided with the installation was 1,400 calories, as compared with 2,400 calories during the period of the experiment before the heating system was installed, while the heat losses before and after the installation, were 1,560 and 560 calories. The gain in heat estimated for the two machines during the short period of the experiment was 1,300 calories; during the long period 1,600 calories, the difference being due to the lower outside temperature.—P. B.

K-12. Drying roll for paper machines. H. H. Vaughan, assignor to Dominion Bridge Co., Ltd. Can. patent 225,946, Nov. 14, 1922. Drier felts are eliminated. The drier is provided with a set of perforation connected by pipes (one for each perforation) to a centrally located pipe which is connected to a suitable suction pump. The connections are such that any given perforation is connected to the suction immediately before it reaches the web on the drier, and the vacuum is relieved as soon as the perforation is no longer in contact with the paper.—A. P. C.

K-19. Production of fancy figured paper. Albrecht Blomberg. Ger. patent 359,588. Addition to Ger. patent 295,565. **Wochbl. Papierfabr.** 54, 172 (Jan. 20, 1923). A covering substance as wax, rosin, etc., is applied to the sheet, the color is then pressed in and, after drying, the covering substance is removed by a solvent or mechanically.—J. L. P.

K-23. Production of white or variegated shaded paper or board. Ger. patent 367,868. **Papierfabr.** 21, 71 (Feb. 4, 1923). Glue or starch products are used in the process as binding materials after being subjected to a very intimate mixing.—J. L. P.

IMPORTS OF PAPER, PULP AND CARDBOARD INTO BRAZIL

By DIRECTOR BIRKELAND, RIO

Papir-Journalen, March 13, 1923.

In Brazil very little of the better sorts of paper are manufactured by the home mills, but, on the other hand, there has been a considerable development of the manufacture of kraft packing paper and cardboard. The paper mills have had a powerful incentive or support in the higher duties of 1919, and these have furnished a strong basis for an increase in domestic production.

As raw material, imported cellulose and woodpulp are used, mixed with waste paper. There has been an investigation looking toward the manufacturing woodpulp from native trees, such as bamboo, the fiber of banana wood, sugar cane waste from the sugar factories together with sape, a sort of grass or straw, which is found in abundance over all Brazil, although hitherto it had not gone beyond the experimental stage. While there is no reason to suppose that imports will cease, the very large imports of newsprint and print paper, and the sums of money that leave the country for this cause, will insure the most strenuous attempts and experiments to manufacture cellulose and woodpulp from inland material. Considering the enormous forest area and plant riches, and the total imports in 1920 of 46,278 tons of paper and boards, and 9040 tons of cellulose and wood pulp, it is obvious that Brazil will try to reduce foreign imports. As a starting point may be mentioned the preparations for a technical laboratory for plant products in combination with theoretical demonstrations under the direction of the State which covers the expense. The idea of an institute of this kind is taken from the Forest Products Laboratory, Madison, U. S. A. Such an institute will be of great interest to the textile industries, manufacture of dyestuffs, etc.

During 1919-1920 imports included the following grades:

	1919	1920
Cigarette paper	379,528 kg.	585,587
Wall Paper	31,604	14,156
Writing	2,453,528	2,868,939
Print	30,875,775	34,702,291
Paper for various uses	11,385,484	6,079,534
TOTAL	57,814,522	55,317,605

Before the war Sweden and Norway occupied the most important position as exporters of print paper, which steadily declined during the war, partly because of high quotations on the home markets and partly because of difficulties of transport. The United States took the lead, since prices from that country were more advantageous, and freights were specially low. In 1919, and 1920 Sweden and Norway recovered their place, and the quantity of exports are now approximately what they were. In 1920 imports of print paper were distributed from the following countries: Norway 9,228,106; Finland 8,888,851; Sweden 6,913,649; U.S.A. 5,254,191, almost exclusively from Europe. Of late years the States have shipped a large quantity of newsprint, but, because of the rate of exchange these imports have nearly ceased. Germany and Finland have steadily come more and more into the market, and with Sweden and Norway are the chief exporters of newsprint.

Most of the Argentine newspapers buy paper in reels for direct shipment, but also get their supplies from import houses, for with small orders this is the more convenient way. The smaller newspapers do not generally buy direct, but naturally higher prices are paid for paper from Argentine stocks than for deliveries from Europe. As a matter of fact contracts are made for weekly deliveries of certain quantities against cash payments over a long space of time. Machine glazed paper is preferred, and some newspapers use calendered paper. Newsprint in sheets is traded in by most import houses, and sold from stock to the smaller newspapers. Most of this paper is exclusively supplied by European mills, since the sheets are not suited to the fast running North American machines. The weight which sells best is of 46 grams per square meter. Only two local mills produce newsprint in sheets — LaArgentina and ElFenix. For the moment, however, prices of the imported paper are so low that this production has stopped. Nearly all kinds of paper that are used in Europe for the printing of cheap books, periodicals, prospectuses, pamphlets, etc., also find a market in Argentina, but the print paper which is sold in the largest quantities is the so-called "papel para obras", which is a grade between the better quality of machine glazed print paper and the cheaper sort of writing paper. A large portion of the imported writing paper is of a cheaper quality than that which is now manufactured in Norway under the name "bond" or "bank" paper. Over a great part of South America writing paper with watermark is in general use, since buyers have the conviction that watermarked paper is superior to others in quality. This is also manufactured in Argentina. Of other sorts of paper which are sold and which are of interest to manufacturers can be named; copy paper, unglazed white and colored tissue papers, pergamyn, and greaseproof. Some firms import kraft of thin and strong quality. Of glazed and unglazed boards it is especially the thinner sheet — from 100 to 150 per kg. — which is in demand. Calendered wood-free print paper, writing and illustration print, copy paper, pergamyn are packed as a rule in boxes, but news in sheets, print containing ground wood, tissue paper, greaseproof and cardboard are crated. As a rule the packing is stipulated in the sales contract.

Only one of the foregoing papers, packing paper, pays a duty by weight. All the others, except white newsprint, pay an ad valorem duty of 20 per cent. These values are fixed in the tariff schedules. Ordinary newsprint is now admitted duty free, but if it weighs over 56 grams per square meter it is of tissue paper, newsprint and white woodcontaining cardboard is characterized as very small, white "papel para obras", and writing paper appears to be in considerable quantity. Prices are extremely fluctuating; for newsprint in sheets about 13 cents per kg. f. o. b. consumer's house, which is little more than 12 cents per kg. c. i. f. Large orders are said to be placed in Germany at 500 marks per 100 kg. c.i.f. However, it is very evident that Germany will have some difficulty in filling these contracts, and that many who have bought marks with which to pay for this paper will have a dangerous monetary speculation on their hands instead of a profitable supply of paper.

Our thoughts may be prayers. There are moments when, whatever the attitude of the body may be, the soul is on its knees.—Victor Hugo.

The greatest events of an age are its best thoughts. It is the nature of thought to find its way into action.

COMMISSIONER EGAN TALKS ON SOUTH AFRICA TO PAPER MEN

Representatives of paper manufacturers, members of the Canadian Pulp and Paper Association, met Mr. W. J. Egan, Canadian Trade Commissioner, South Africa, at the offices of the Association, Montreal May 9. The object was to discuss the possibility of extending the trade in paper and paper commodities in that country.

Mr. Egan pointed that South Africa is a growing consumer of paper, and that except for the output of one small wrapping mill, is obliged to import all its requirements. Imports come from Canada, the United Kingdom, Scandinavia and Continental Europe. Except in the case of wrapping paper of the kind produced locally no duties are imposed on paper imports. Canadian paper has always stood in high favor and there is a marked preference for dealing with Canadians wherever possible. Canadian kraft wrapping is making marked progress there. Canadian newsprint is most acceptable but is losing ground on account of unwillingness on the part of Canadian mills to compete in price with Norway and Sweden, which undersell Canadian mills to an amount, in some instances, equivalent to $15 a ton. Canadian bond papers are well thought of and would probably be adopted by the Government for all official use if a suitable price were quoted. Rotogravure paper is coming into use and more of it will soon be required and there is no reason why the supply should not be drawn from Canada. Shipping facilities from Canada are adequate and no difficulties are now being met with in that particular.

The Commissioner's conclusions are:

(1) That the South African paper trade is open to Canada whenever we are prepared to meet price competition.

(2) That local representation is essential to the building up of a successful connection in the country.

(3) That the effort should be to establish a permanent trade rather than a temporary one based upon the necessity of disposing of surplus products when the home market is dull, and to this end he recommends that when a connection has once been established exporters should make a practice of providing for the requirements of their export markets, regardless of how it may temporarily affect their home market. Mistakes have been made in the past by offering commodities with the implied understanding that a continuous supply could be obtained as and when desired only to disappoint buyers later on. This practice leads to dissatisfaction and interferes with making a permanent market.

In view of the Conference, the Association prepared a special report dealing with the Canadian trade in paper with South Africa. This states that in the fiscal year ending March 31st, 1923, Canada's exports of paper to South Africa were valued at $1,060,000, which was about 20 per cent greater than the total for the previous twelve months. In 1914 our exports were valued at $441,723 so that considerable development has taken place during the past eight years.

While our exports to South Africa are not large in comparison with those to some of the other countries, they cover a wide range and include newsprint, wrapping, book, bond writing and roofing papers and paper board in addition to bags and cartons and other manufactures of paper.

Our greatest trade with South Africa was done in 1919 and 1920 when business was good and European competition was practically absent. Like all other countries, however, South Africa suffered from the after-the-war depression, which with keen European competition reduced our exports considerably.

The following tables show the exports of various grades of paper from Canada to South Africa for the past four or five years. Figures are for Canadian fiscal years ending March 31st.

Wrapping (Kraft)	Cwts	Value
1920	26,644	$202,484
1921	54,015	624,193
1922	9,834	85,805
1923	25,176	202,773

Our exports of wrapping paper for the twelve months just ended were almost equal to those in 1919-'20 and a good recovery was made from the heavy decrease in 1921-22.

Newsprint. — Our exports of newsprint have not fluctuated during the last few years to the same extent as exports of other grades of paper. The totals are as under:

	Tons	Value
1919	5,290	$ 406,401
1920	4,226	359,581
1921	7,782	1,031,408
1922	6,776	681,278
1923	7,718	688,095

The total consumption of newsprint in South Africa is reckoned at 9,000 to 10,000 tons, and the Canadian manufacturers continue to hold a fair share of the business although Scandinavian newsprint is being offered at low prices.

Book, Bond and Writing Papers. — Exports under these headings have made a poor showing in the last two years although business in bond and writing papers improved to some extent during 1922.

Figures are as follows:

	Book Paper		Bonds and Writings	
	Cwts	Value	Cwts	Value
1920	5,774	$51,725	1,373	$13,135
1921	5,886	70,748	2,223	37,781
1922	1,119	15,250	348	4,880
1923	24	189	722	9,132

Paperboard. — Canadian exports of paperboard to South Africa showed a considerable increase in the twelve months ending March 31st, 1923, over the previous year and were almost equal to the 1919 figure. The Department of Commerce does not record quantities but the high value in 1921 was no doubt due to higher prices rather than to large quantities: 1919, $114,030; 1920, $124,735; 1921, $244,546; 1922, $56,167; 1923, $105,159.

Other Grades. — Canadian exports of other grades of paper to South Africa are given in the following tables:

	Bags, Boxes & Cartons	Roofing Paper
1920	$ 4,836	$51,453
1921	21,054	12,860
1922	12,610	29,759
x1923	15,619	19,817

	Wall Paper rolls	Other Paper & Manufactures	
1919	255,701	$22,030	$191,743
1920	266,321	24,444	15,688
1921	234,545	34,697	67,178
1922	46,148	9,467	6,897
x1923	16,636	2,595	8,726

x Figures are for 11 months only, to February 28, 1923, March figures not yet published.

SAFETY ON THE STREET

One of the most distressing sights that meet the human eye is to see a child run down by a street car, an automobile, or by a truck or wagon on our public streets. The injury is not always fatal, of course, but very often it results in the loss of a leg or arm or in some physical disfigurement the child must bear through all its life. The grief of the parents is heartbreaking and is shared by friends and neighbors. Every one loves children and every one suffers when a child meets an injury. What is the answer? How may we prevent street accidents? As citizens, we must do all that we can to assist in the enforcement of laws governing traffic, and, as parents, we must see that our children are taught habits of safety. One careful parent will do much to encourage an entire neighborhood to observe the a, b, c's of Safety First.

What shall we say when the injured person is a man or woman? The injury may be equally serious and is always shocking and distressing but we have less patience than in the case of a child. To prevent these accidents we must rely on the enforcement of traffic rules and we must see to it that not only do we obey them ourselves, but that we encourage others to acquire the Safety habit. Here is a standard rule: "Look to the left when you start across a street; when you reach the center, look to the right; when you are in a critical position use your common sense and do not lose control of yourself." If the danger is from an auto, stand still and do not confuse the driver by dodging. Never pass behind a street car, auto or wagon without looking to see whether another car or auto is approaching from the other direction. "Keep your head" is a mighty good rule.

There are many unnecessary street accidents. Some of them are caused by slipping and tripping; being struck by projecting ladders, poles, etc. from wagons as they turn corners; material or articles dropping from above. You can easily picture a dozen which you know have caused an injury to yourself or to a member of your family or friend. Most accidents are preventable, if we will use the brains that were given to us, and think Safety.

Owing to the inadequate response to the invitation to visit the mills of Fort William and Port Arthur in July, the Technical Section of the Pulp and Paper Associaton has decided to drop the proposed summer excursion to those points. It was found that members could not get away for the length of time involved. The idea of a summer meeting however has not been abandoned, a proposal being under consideration to hold a meeting in Montreal, with visits to mills in the district.

ODORLESS MANUFACTURE OF CHEMICAL WOOD PULP

Swedish cellulose industries, in general, under the supervision of E. L. Rinman, have completed experiments with the satisfactory results of a newly invented method of producing cellulose, which is proved superior in many respects to the old vile-smelling methods. Rinman works with lyes that are free from sulphur, and succeeds in producing chemical products of high value from the organic substances which have been dissolved by the waste lye; while the sulphate method uses sulphur bearing lyes, and consumes as fuel the organic substances contained in the waste lyes; though not unlike in the actual production of cellulose, the two methods differ essentially in the composition of the boiling solvent, as well as the further treatment of the waste lye.

Dr. Rinman has succeeded in making the manufacture of cellulose entirely odorless by using sulphur-free lye, thereby solving a most vexing problem which innumerable efforts in the past have failed to solve. There is, at the same time, great economic advantage in being able to utilize the large amount of organic substances, comprising 50 to 65 per cent. of the volume of the wood, which escapes during the boiling of the cellulose and passes into waste lye.

From Canadian Chemistry and Metallurgy, February 1923.

Book Reviews

PRINTING IN ASIA

We have received with much interest the first issue of the Asian Printers' and Stationers' Annual, Diary and Directory published by Cama Norton & Co., Bombay India, and edited by M. N. Cama B. Sc.

According to the editors' foreword this prohibition was conceived and published in three months.

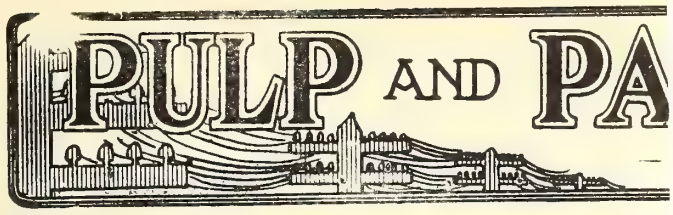
Varied information of interest to printers and allied trades is given.

Among them is an article on the Press in India by R. N. Vatchighandy, covering its development to date from the first newspaper published in 1780 to the present total of 883 with over 2000 periodicals as shown in table page 11 the varied governmental restrictions and regulations.

There is a table of Printing Presses now at work, showing 3,146 in 1918-19. An account of the Government Printing office of paper, contains some interesting notes and the same may said of the article on "How Foreign Paper Manufacture developed in Japan." The designation of "foreign" being presumably applied to machine made. Japan produced in 1921 238,594 tons of paper. The two largest mills in paper are the Fiji Paper Mill Co. with a capacity of 10,800 tons annually and the Ioma-komai mill of the Oji Paper Mfg. Co., with a capacity 24,000 tons annually. The remainder of the works consists of Diary aind Directory of printing and allied trades with table of useful information to printers and stationers.

We wish the publishers every success in the prosecution of this work.

A large part of the work of philanthropy and of the churches, as well as of the state, is an attempt to undo the work of the saloon.



K. S. Maclachlan, mills superintendent of the Lincoln Mills, Limited, at Merritton, Ont., has been appointed vice-president of the company. Mr. Maclachlan is widely known in the Ontario paper trade and his promotion is a popular one.

At least one Ontario cover paper manufacturer has adopted the new size of cover paper which has become standardized across the line. One of the mills has now started to ship their product in 23 x 33 sheets, which conforms to the American size and which has been adopted from the standpoints of economy and convenience. The old size which has existed for years was 22½ x 28½ inches. Demi cover, 20 x 26 remains unchanged.

W. H. Craft, representing Wiggins, Teape & Co., and Alex. Pirie, Limited, two widely known paper houses in London, Eng., called on the Toronto paper trade last week.

O. H. Moore, general manager of the Hinde & Dauch Paper Co., of Canada, Limited, Toronto, has returned after a business trip to various cities in the States.

That the long price list put in use some time ago by the paper jobbers at the instigation of the printers is not altogether popular is indicated by a letter received by a Toronto wholesale paper merchant last week from an Ontario printing and publishing house. "May we be permitted to say, "the letter says, "that the long price list you have been issuing for some time is an unmitigated nuisance, and the invoices you send out with deductions and plus and whole rows of useless figures are an annoyance, pure and simple. We were never in favor of the proposed change, and having tried it feel satisfied that the majority of the printers outside of the cities would much prefer to revert to the former system of net prices. So keenly do we feel on this matter that we are prepared right now to transfer the bulk of our trade to any paper house that will issue a net price list."

Barber-Ellis, Limited, head office Toronto, have opened up a warehouse in Montreal at 230 McGill Street where they will carry in stock the Barber-Ellis line of envelopes, papeteries, writing tablets, etc. The new warehouse will be in charge of Mr. Reid, who has served that territory for a number of years.

N. E. Wainwright, who is handling the output of the Port Arthur mill of the Provincial Paper Mills, Limited, has just returned from a business trip to Winnipeg. It is understood that Mr. Wainwright will take up his permanent residence in Oakville, near Toronto.

Maj. R. B. Herron, of R. B. Herron & Co., Tionage, Ont., who took out several thousand cords of pulpwood for the Spanish River Pulp and Paper Co., Ltd., is embarking in business for himself in the wholesale lumber line in Toronto and will handle all kinds of forests products, including piling and pulpwood.

Charles V. Syrett, head of the Victoria Paper and Twine Co., Ltd., Toronto, has drawn the attention of the Ontario Motor League to several dangerous

Firemen fought a stubborn blaze last week in the wallpaper warehouse of Stauntons, Limited, 54-56 McMurrich street, Toronto. The damage done to the building was placed at $1,500. Edmund G. Staunton, president of the company stated that there was a large stock of wallpapers in the structure most of which was destroyed by fire or water. The loss was covered by insurance.

Reid Brothers, Limited, London, Ont., whose paper box plant was burned a few months ago, have called for tenders for a new factory. The building they have planned is one floor and basement, 150 x 70 feet and will be built on a lot 150 feet square so that they will have plenty of light on both sides. The site is on a railway siding in the city's industrial area.

Two of the officials of the Spanish River Pulp and Paper Mills, Col. C. H. L. Jones and George R. Gray, of Sault Ste. Marie, Ont., celebrated their birthdays during the month of May. Col. Jones was born at Montreal on May 1, 1876, and Mr. Gray was born at Coldwater, Ont., on May 4th, 1865.

The Spanish River Pulp and Paper Mills are shipping large quantities of pulpwood from their Espanola mill to their plant at Sturgeon Falls to help fill their orders. The Espanola mill is unable to grind wood on account of the lack of power consequent upon low water.

LABOR ORGANIZATION IN CANADA, 1922

The figures published in the Twelfth Annual Report on Labor Organization in Canada, covering the calender year 1922, which has just been issued by the Department of Labor, show that during the three-year period from 1920 to 1922 there has been a decline in trade union membership in Canada of 101,426, the loss in the last calender year being 156 in branches and 36,699 in members. The total membership of all classes of trade unions in the Dominion at the close of 1922 stood at 276,621, comprised in 2,512 local branches . There are in all 92 international organizations operating in Canada, and between them they have 2,108 local branches in the Dominion, with a combined reported membership of 206,150. These figures indicate six fewer international organizations operating in the Dominion, with losses of 115 in branches and 16,746 in members. There are eighteen of what are termed "non-international" organizations, an increase of three over the year 1921, with totals of 272 local branches and 22,973 members, a gain in branches of eight, but a decrease in membership of 1,507. The number of independent units of trade union organizations has decreased by two, there now being 25 such bodies, the reported total membership being 9,063, a loss of 6,581. The unions commonly known as "National and Catholic" number 106, with a reported membership of 38,335, a decrease in unions of 14 and in members of 6,635. Of the 34 local units of the One Big Union which were in existence in 1921 only one reported, and as the general officers of the body refused to furnish any information as to its standing, all of the non-reporting branches have been dropped from the report the figures recorded above indicate that, although the international organizations had the heaviest decrease during the year 1922, this group represents approximately 74 per cent of the total trade unionistse in the Dominion. The membership of all classes of organized labor in Canada, as reported to the Department for the past twelve years, has been as follows:

1911 ... 133,132	1915 ... 143,343	1919 ... 378,047
1912 ... 160,120	1916 ... 160,407	1920 ... 373,842
1913 ... 175,799	1917 ... 204,630	1921 ... 313,320
1914 ... 166,163	1918 ... 248,887	1922 ... 276,621

Trade Union Membership by Provinces. — The 2,512 local branch unions of all classes in the Dominion are divided by provinces as follows: Ontario, 1,045; Quebec, 456; British Columbia, 235; Alberta, 209; Saskatchewan, 163; Manitoba, 134; Nova Scotia, 147; New Brunswick, 114; and Prince Edward Island, 9.

Other Important Features of the Report. — Besides the statistics furnished, the report gives particulars concerning certain revolutionary labor organizations of recent formation and the doctrines wheih their promoters are endeavoring to propagate in Canada as well as in other countries. The volume also contains much general information as to the activities of organized labor in Canada, as well as references to important labor events both at home and abroad. As a directory of trade unions the report is very complete, containing particulars of every known local trade union in Canada, and also lists of central organizations and delegate bodies, together with the names and addresses of the chief executive officers for the year 1923. A chapter in the report is devoted to an important class of organized wage-earners who are not connected with the organized labor movement, included in which are associations of school teachers, commercial travellers and government employees. In all there are 63 such bodies having a combined reported membership of 81,373.

SPANISH RIVER THIRD BIGGEST

It was learned at the head office in Toronto of the Spanish Pulp and Paper Mills, Limited, that production of newsprint is now proceeding at the highest point in the company's history, being in excess of 700 tons of newsprint a day. As is generally known, the Spanish River Company is the largest producer of newsprint among the Canadian mills, and is third on the continent. The company reports that the demand is well maintained and that the entire output is finding a ready market. The company, at the beginning of this month introduced a new wage scale in all departments, which provided an all-round increase of five cents an hour. Thus far no official report has been received of the progress made in floating pulpwood from the woods to the company's mills, but the spring break-up appears to have come without any flooding, a condition generally favorable to the operators. Pulp supplies are expected to come down without any serious difficulties.

The Canadian pulp and paper companies have responded in a free way to contribute to the exhibit of pulp and paper products in connection with the Canadian exhibition train which will tour France. A representative collection of pulp and paper products is assured.

UNITED STATES NOTES

New York State won a $250,000 verdict when the United States Supreme Court last week declined to review the decision of the New York Court of Appeals in the Taggarts Paper Company case. This litigation has been before the courts for several years. The question involved was the right of the Taggarts Paper Company to interest on a claim growing out of the appropriation by the State of 11,897 acres of land in the town of Webb, Herkimer County. The statute authorizing the appropriation in 1909 gave the company the option to reserve the spruce timber growing upon the land taken upon consideration that the award for damages should not draw interest until all reserved timber had been removed. The company subsequently set up the claim that the provision of the statute denying interest deprived it of just compensation for its land and accordingly transgressed the Fourteenth Amendement to the United States Constitution.

It will require 354,388,000 envelopes to inclose the mail of the Government next year, and as an indication of what these figures mean, the Post Office Department announces that a contract has just been let for 140,000,000 official envelopes for that department alone at a cost of $178,061.

Plans for the erection of a pulp and paper mill near Vancouver, at a cost of $8,000,000, are said to be nearing completion in the offices of the Seaman Paper Company at Chicago. The new pulp mill, which we have a capacity of about 250 tons a day, will give employment to about 1,000 persons. It will obtain its supplies of pulpwood from the pulp lands near Vancouver owned by E. J. Young of Madison, Wis.

The Special Senate Committee on Reforestation last week began an investigation of forestry conditions in the Great Lakes region. Hearings were held at Bay City, Mich., Grand Rapids, Mich., Chicago, Madison, Wis., and Cloquet, Minn. The committee may also hold hearings at Duluth and other places before it disbands for the summer. When it reasonables next fall, it will conduct investigations in the Northwest and on the Pacific Coast.

The Senate Committee left Grand Rapids for Chicago with three outstanding conclusions from their Michigan inquiry. The first of these was that private owners will do little forestation work because of the lack of visible profits. Second, that Michigan holders of cutover land ask more Federal and State aid in the matter of five protection. Third, that persons who have appeared before the committee have unanimously expressed the belief that the Federal government should come into the State and take control of large areas of land for reforestation with the idea that if the government can prove the feasibility of producing timber crops it will blaze the way for private enterprise.

The New York State Industrial Commission's survey of the industrial wage situation in the State during recent months shows that advances in wage scales were the most numerous in the metal industries, in the manufacture of building supplies, and in the paper mills.

Among tourists arriving in New York on the French liner Paris last Saturday was Hubert Biermans of the Belgo Paper Company.

The gypsy moth, which is destroying forests in many parts of the United States, will be fought in New Hampshire by a balloon, which will hover over the affected areas and spray them with chemicals. The balloon, especially constructed for this purpose, and equipped with two powerful motors, will be operated by army aviators, and will go to such districts as are most afflicted by the gypsy moth plague. Experts state that the balloon can cover a far greater area with greater efficiency than would be possible by any sort of land operations. The spraying can be done with accuracy from the air. The balloon, motor-driven, has the ability to maintain a stationary position over a given point for any desired length of time and therefore is ideal for the work it is designed to do.

Due to reports of successful experimentation in the work of reforesting Hawaiian mountain regions from the air, The Department of Agriculture is considering making similar experiments in the United States. A report received by the War Department from Mayor General Charles P. Summerall, commanding the Hawiian Department, said that the new venture revealed possibilities of great national value.

The Bangor, Me. Rotary Club has elected Franklin E. Bragg president. Mr. Bragg is head of Orono Pulp and Paper Company. He has long been a prominent Rotarian and is a generally popular citizen of Bangor, active in all affairs pertaining to the public good. He has served as president of the Bangor Chamber of Commerce.

The Western Waxed Paper Company, which is affiliated with the Central Waxed Paper Company of Chicago, has completed plans for the erection of a large factory in Oakland, Cal. The new plant will be of reinforced concrete, one story in height, and will have floor area of 30,000 sq. feet. It will cost about $60,000. The company manufactures printed and plain waxed paper products. The Warren Manufacturing Company has issued an attractive illustrated booklet to commemorate its fiftieth anniversary. It is entitled "Fifty Years of Paper Making," and to the uninitiated it probably has all the charm of an undiscovered territory.

PAPER EXPORTS TO AUSTRALIA

Washington, May 11. —Canada tied with Sweden for second place in the list of countries selling paper to Australia in 1921, according to statistics recently issued by the Australian Government, and reported to the Department of Commerce by the U. S. Consul at Sydney. The Australian paper imports for the year ending June 30, 1921, according to this report, were: From Great Britain, $8,672,000; Canada and Sweden, approximately $5,400,000 each; from the United States, $3,760,000; from Norway, $3,260,000.

No peace is ever in store for any of us but that which we shall win by victory over the sin that oppresses, as well as over that which corrupts.—Ruskin.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, May 15. — Speaking generally, the pulp and paper industry is in a satisfactory condition. Almost every section reports a good volume of business with prices on a firm basis. Trade in the Eastern part of Canada is apparently on a solid basis, and that after all is the important factor in relation to the pulp and paper business. From the local point of view, there is nothing to complain about, if we except the dull state of the printing industry.

Apparently there is no lack of faith in the future of the industry. In all parts of the country there are developments in the manufacture of pulp and paper. Those connected with newsprint being no doubt based on a belief that the present very active demand is no mere flash in the pan. The latest projects include a groundwood mill at Sillery, near Quebec, and a small tissue mill at St. Andrews, on the North River, P.Q. Then we have the additional capital requirements of the Canada Paperboard Company, Limited. Besides these other important developments in newsprint and pulp are under consideration; one of them involving the outlay of several million dollars. Appearances therefore point to an expansion of the industry. At the same time there are those who are of the opinion that we are in danger of going a little too fast, and that the menace of overexpansion is likely to prove harmful to the entire industry.

With regard to newsprint, any surplus stocks are immediately disposed of. For the moment there is a slight shortage, due to some conditions which are of a more or less unusual character. Two or three mills have not been able to produce at full capacity owing to this reason. The American publishers are understood to be using up reserve stocks to a certain extent; with circulations on the jump and advertising increasing, the publishers are not anxious to limit the size of the papers, and in the absence of getting their full demands from mills, some publishers have to fall back upon reserve stocks. The spot price is now a little stronger.

In most other lines there have been only unimportant changes. Orders are coming into the mills at a fair rate, and quotations keep firm. Most plants are running at war capacity, and some are behind hand in their deliveries.

There is a good demand for groundwood, and it is hard to pick up any surplus tonnage. The price remains steady although it has gone back from the high point recently attained. Sulphite is a fairly good market, while bleached continues in satisfactory request at unchanged prices. It is certain that there will be a substantial shortage in the Swedish production of pulp, and although the price has dropped a little it is probable that the tendency will now be upwards.

The pulp and paper companies in the Province of Quebec are backward in their drive of logs owing to the late period of the break-up of the ice in the lakes. The price of pulpwood has strengthened, sales having been made at $22 per cord of peeled wood delivered at Watertown points.

Toronto Market News

While the distributing end of the paper trade in Ontario continues somewhat dull as far as volume of turnover goes, the feeling is one of optimism in respect to the probability of an early return to normal selling. One of the factors that will make for this is the ending of the uncertainty as to possible tariff changes at Ottawa and now that the budget has been brought down business interests generally know where they stand. It is believed that the paper trade generally will be favorably affected by this ending of uncertainty as to what was likely to be done in the way of tariff readjustments and that from now on business in paper lines will settle into a steady stride. One leading Toronto paper wholesaler interviewed last week said that while there was a disposition on the part of many jobbers to complain of lack of business, he ventured to say that most of the paper wholesalers were doing a larger business than they were a year ago, and some of them just as big a business as before the war. It might be, however, that the net receipts were not as large and they might not reach such a large aggregate, owing to lower prices, but on the whole he believed a satisfactory volume of what might be termed small business was being done and the wholesale paper dealer, when he came to view the situation closely, had little to complain about. The trouble was, he said, that paper men got into the habit of doing big business in a big way during the fat years and many of them had not adjusted themselves to smaller business and smaller profits, with lower expenses, which now prevailed. A number of Toronto houses report business as showing some signs of improvement and predict that by the middle of the month there will be a demand for lines of paper that have not been in large call during the past few weeks. This applies chiefly to such lines as wrapping paper, paper bags, and light weight papers.

PULP. — There is comparatively little activity in pulp circles and manufacturers report very little kick to the market. Very few of the paper mills are stocking. Groundwood pulp is quoted at from $35.00 to $40.00; bleached sulphite at $85.00 to $95.00; unbleached at $56.00 to $65.00 and news grade at $56.00.

RAG AND PAPER STOCKS. — Ontario dealers in rag and paper stocks report a distinct improvement in demand for both lines with the opening of May, although there is some complaint concerning the inroads of American buyers close to the border who are grabbing up considerable stuff on the Canadian side and keeping their own prices low. This is taken to indicate that prices generally will strengthen very shortly. According to the testimony of the Toronto rag and paper stock men the paper mills and board mills are busy, judged by the quantities of stock they are buying and the amount of scrap and trimmings being collected. They also report considerable trim-

mings from the printing establishments indicating a fair amount of business doing in this quarter. Prices of rags and paper stocks remain unchanged.

WRAPPING AND BAGS. — Jobbers handling wrapping papers and bags report a distinctly better tone to business since the opening of May and there is considerably more buying, although still in small quantities. The wrapping paper trade has been extremely dull for the past couple of months, but there are signs that it is about to come back again and both mills and jobbers are optimistic concerning the outlook, for good spring business.

NEW YORK MARKETS

New York, May 12. —(Special Correspondence).— Firmness in prices is probably the outstanding feature in the paper market at present. On every hand are indications of a strong situation in prices of paper of practically all kinds. It is quite apparent that demand in some cases has slowed down. Consumers seem to be resting on their oars, so to speak, with regard to additional purchases at the moment, presumably having covered their requirements for a while and not being anxious about increasing their commitments, yet in spite of the quieter market condition prices hold exceedingly firm, and, if anything, the tendency of quotations on most kinds of paper is in an upward direction.

The fact that buyers have let up somewhat in their operations does not by any means mean that the market is dull. Instead, paper is moving into consuming channels in a steady manner and in large amounts. Paper mills are well booked with orders and are running with few exceptions at close to capacity and shipping out their product about as quickly as it leaves the machines and is made ready for shipment. Moreover, reports say that a majority of paper manufacturers have enough commitments on file to keep them busy for some weeks to come. The mere fact that mills are so well supplied with orders is probably the reason demand has slackened, since consumers doubtless have anticipated their wants in such a way as to enable them to diminish their buying for a time.

The market for newsprint rules very firm. Print paper is moving in record tonnage and is being consumed about as rapidly as it reaches publishers. Notwithstanding the approach of the summer, when consumption of newsprint usually decreases owing to a falling off in display advertising in the daily press, publishers are still printing big issues. Many of them are still announcing in nearly every issue that so and so many columns of advertising were crowded out because of lack of space, thereby intimating that publishers are limiting the size of their issues.

The trend of opinion in the trade is that an advance in newsprint prices will surely be put into effect for the third quarter of the year. Intimations have been made by manufacturers that such will be the case though no definite announcements have yet been made. Up to the present it has been believed that the rise would amount to $5 a ton; now it is felt by many that the advance may be larger talk having been heard of the probability of a $10 per ton increase being made

Fine papers are in an active market position. Demand for bonds and ledgers is seemingly as brisk at present as at any time thus far this year, and mills are reported operating at close to full production. Prices of fine papers are strong. Advances in raw material,

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higher wages and other factors all make for a firm fundamental condition, and manufacturers in frequent cases are marking up prices on certain lines of paper to bring them in better proportion with the prevailing cost of production. Indications are that fine papers and newsprint are enjoying the strongest market conditions of any other descriptions of paper.

Book papers are also firm in price and are moving in steady volume of no mean dimensions. Publishers are absorbing all the supply they have on contract and are frequently coming into the market to augment stocks. Consumption appears to be constantly on the rise, and most mills are well enough "heeled" with orders to keep them active for sometime.

Box boards are in rather limited demand. Certainly manufacturers could readily accomodate more business than they are getting, this being partly due to demand for board having slackened and partly to the fact that boards must move in close to record amounts to give mills sufficient to do to keep them all busy. In other words, it is no secret that board mill capacity is a little greater than the market can stand unless demand is of a scope experienced only in the paper box industry's active seasons of the year.

Plain chip board is quoted at $55 to $60 a ton, with news board quoted at similar prices. Market conditions are in favor of buyers securing some board at even lower prices than these. Mills want orders, and it is understood that certain of them are reducing prices off and on while seeking tonnage orders.

Coarse papers also are relatively quiet. Demand for wrapping has subsided to some extent, and tissue is not wanted in as large quantities as recently. No changes of note have occurred in prices, however. Manufacturers are maintaining quotations, and seem to be getting the prices named on such supplies as buyers desire.

GROUND WOOD. —Current demand for ground wood is spotty in character and rather limited in compass. Consumers are coming into sight as buyers only at intervals or as their needs develop, and it is noticeable also that the great bulk of buying is by those paper and board mills who have no facilities for grinding their own pulp. In other words, mills up through New York State are mostly enabled to produce all the ground wood that they themselves require, since water conditions have improved perceptibly, and not only are they out of the market as buyers but some of them are sellers of pulp.

Prices of ground wood hold fairly steady. Between $47 and $50 a ton delivered consuming plants is the range of prevailing prices, with f. o. b. grinding mill quotations running from $33 a ton all the way up to $40, depending on the freight from producing to consuming centres.

CHEMICAL PULP. —What seems to constitute a "buyers' strike" is said to exist in the chemical wood pulp trade. Demand from paper manufacturers is at best light; most consumers are coming into view as buyers only in a spasmodic way and even then are limiting their orders to rather small tonnage of pulp. The reason for the slow demand appears to be that paper and board mills have substantial supplies of sulphite and kraft on order, both for first open water shipment from Sweden and for delivery from domestic and Canadian producers, and there is a tendency to hold off in additional purchasing until some of the supply of pulp they have contracted for is at hand and until needs are more pressing.

Wood Pulp Trading Co., Ltd.

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WOOD PULP AGENTS

In spite of the quietness, the price tone of chemical pulp is firm. No one is exerting pressure on buyers; fortunately for sellers they are in almost as strong a technical position as are buyers as few of them have large amounts of pulp to dispose of. Offerings from Scandinavia are far from up to usual tonnage, and indications are it will be sometime before normal supplies of sulphite and kraft will be available in Sweden for open market trading. Prime unbleached sulphite of foreign origin has sold in New York at 3.40 and 3.50 cents a pound ex dock, and Swedish kraft has brought up to 3.45 cents. These pulps are held with especial firmness owing to low spot stocks and the situation at primary sources. Unbleached sulphite of news grade is bringing around 3.25 cents, while bleached sulphite of foreign make is quoted at 4.50 to 4.75 cents a pound and No. 1 domestic at 5 cents.

RAGS. —The market for papermaking rags lacks important activity. This does not mean that there is no demand for rags, on the contrary mills are buying in a fairly large way, but business is minus that snap that is a feature in busier periods. Dealers in New York are maintaining quotations on nearly all kinds of rags. Roofing stock has eased off slightly further this week but little or no change is noted in other grades, and present prospects are that it is quite likely rag values will be pretty well sustained throughout the summer.

Roofing stock has sold at 1.35 cents a pound f. o. b. New York for No. 1 packing, and 1.20 to 1.25 cents New York for No. 2 stock. Certain felt paper mills have bought in a moderate way at these prices while others have evinced virtually no interest. New cuttings have quieted considerably but no alteration in quotations is recorded. Old whites are steady, as are thirds and blues, dealers locally asking an average of 2.65 cents for repacked blues and 2.25 cents for miscellaneous packing.

PAPER STOCK. —Prices of waste paper appear to have steadied. No declines of importance have occurred this week, and in several cases those grades which up to a few days ago had shown a consistent downward movement have improved their prices position to some extent. Demand from mills has been fair; at least better than during the period of price reaction up to a few days ago. Folded newspapers have sold at 1.15 cents a pound f. o. b. New York, and No. 1 mixed paper at 90 cents a hundred pounds, prices on both these grades representing advances of $2 to $3 a ton from the bottom levels recently prevailing. Shavings also display a stiffening price tone. Demand for soft white shavings has been fairly active and dealers report sales of No. 1 packing at 3.50 cents per pound New York, while hard white shavings of No. 1 quality are quoted at an average of 4.25 cents at shipping points. Flat stock is dull and weak. Offerings by dealers of heavy No. 1 books and magazines at 2.05 and 2.10 cents a pound are seldom taken up by consumers, who seem to be neglecting book stock while presumably using wood pulp. Old kraft paper is firm at 2.10 cents a pound New York.

OLD ROPE AND BAGGING. —Old manila rope continues firm in price and is moving to paper mills in a steady manner. Dealers report sales of domestic manila rope in No. 1 condition at 7 cents per pound and slightly higher at shipping points, and foreign rope is worth very nearly as much. Old strings are freely wanted and are rising in value. Mixed strings are quoted at around $1 a hundred pounds New York, and sisal strings at 150 cents. Old bagging is dull. Occasional sales to roofing mills at about 1.05 cents a pound New York are reported, while No. 1 scrap bagging is quoted to tissue paper mills at 1.25 cents per pound.

An entirely new departure in the manufacture of blotting paper is forecasted by the Forest Products Laboratories of Canada, as a result of an investigation recently carried out in their experimental paper mill. The best grades of blotting paper have hitherto been made from rag pulp, but the Laboratories have succeeded in producing a paper with excellent absorptive properties entirely from wood-pulp.

CHANGES OF ADDRESS

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Tenders for Pulpwood and Timber Limit.

Tenders will be received by the undersigned up to and including the 22nd of June, 1923, for the right to cut pulpwood and timber on a certain area situated in the watershed of the Trout and Chapleau Rivers in the districts of Sudbury and Algoma, comprising an area of 1,049 square miles.

Tenderers shall state the amount per cord on pulpwood that they are prepared to pay as a bonus in addition to dues of 80 cents per cord for spruce and 40 cents per cord for other pulpwood, or such other rates as may from time to time be fixed by the Lieutenant-Governor in Council, for the right to operate a Kraft pulp mill and a paper mill.

Tenderers shall also be required to say what they are prepared to pay, per thousand feet Board measure, for the following classes of timber, over and above the upset prices in addition to Crown dues:

Upset price — Red and White Pine	— $6.00 pr M ft. B. M.
Spruce (too large for pulpwood)	— $5.00 per M. ft. B. M.
Jackpine (banksian)	— $2.50 per M. ft. B. M.

The Crown dues on Pine including Jackpine being $2.50 and on Spruce $2.00 per M. ft. B. M., or such other rates as may from time to time be fixed by the Lieutenant-Governor in Council.

The successful tenderer shall be required to erect a mill or mills within the limit or at some point in Ontario approved by the Minister, and to manufacture the wood into Kraft pulp, and also such portion thereof into Kraft paper when required so to do.

Parties making tenders will be required to deposit with their tender a marked cheque, payable to the Honourable the Treasurer of the Province of Ontario, for fifty thousand dollars ($50,000), which amount will be forfeited in the event of the successful tenderer not entering into agreement to carry out conditions, etc.

The said $50,000 shall remain on deposit until the Kraft pulp mill, as provided by terms and conditions of sale, is erected and in operation. Any timber cut in the meantime shall be subject to payment of dues and bonus as accounts for same are rendered. After the said pulp mill is erected and in operation the deposit of $50,000 may be applied on account of bonus dues as they accrue, but the regulation dues as mentioned above shall be paid in the usual manner as returns for cutting of wood and timber are received and accounts rendered.

The highest or any tender not necessarily accepted.

For particulars as to description of territory, capital to be invested, etc., apply to the undersigned.

All tenders should be enclosed in sealed envelopes and marked plainly on outside "Tender for Trout-Chapleau Pulp and Timber Limit."

BENIAH BOWMAN,
Minister of Lands and Forests.

Toronto, April 16th, 1923

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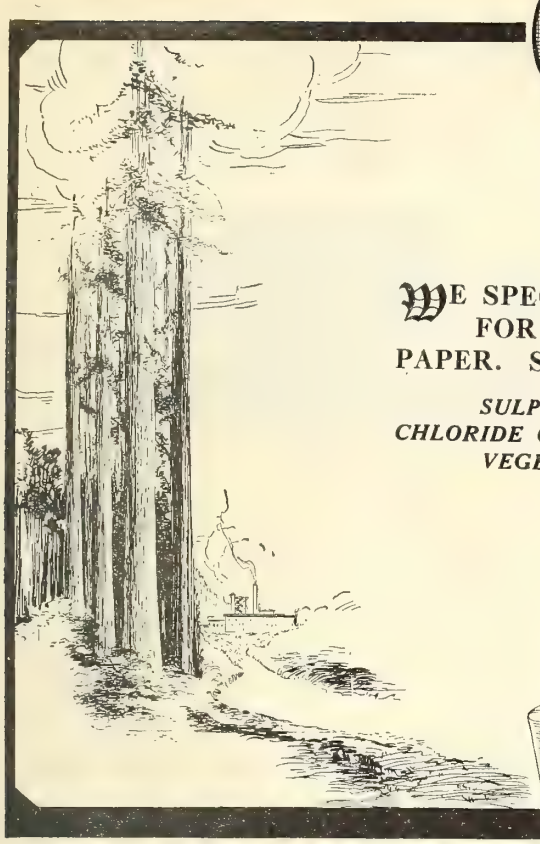
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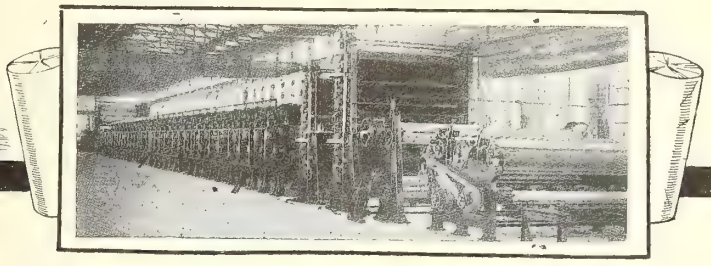


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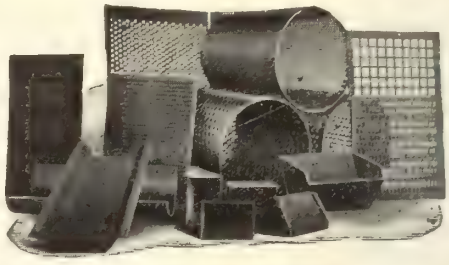
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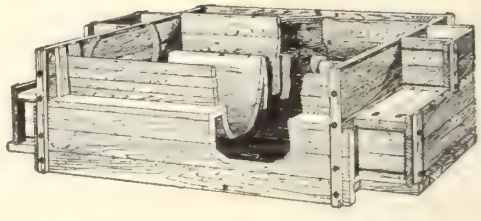
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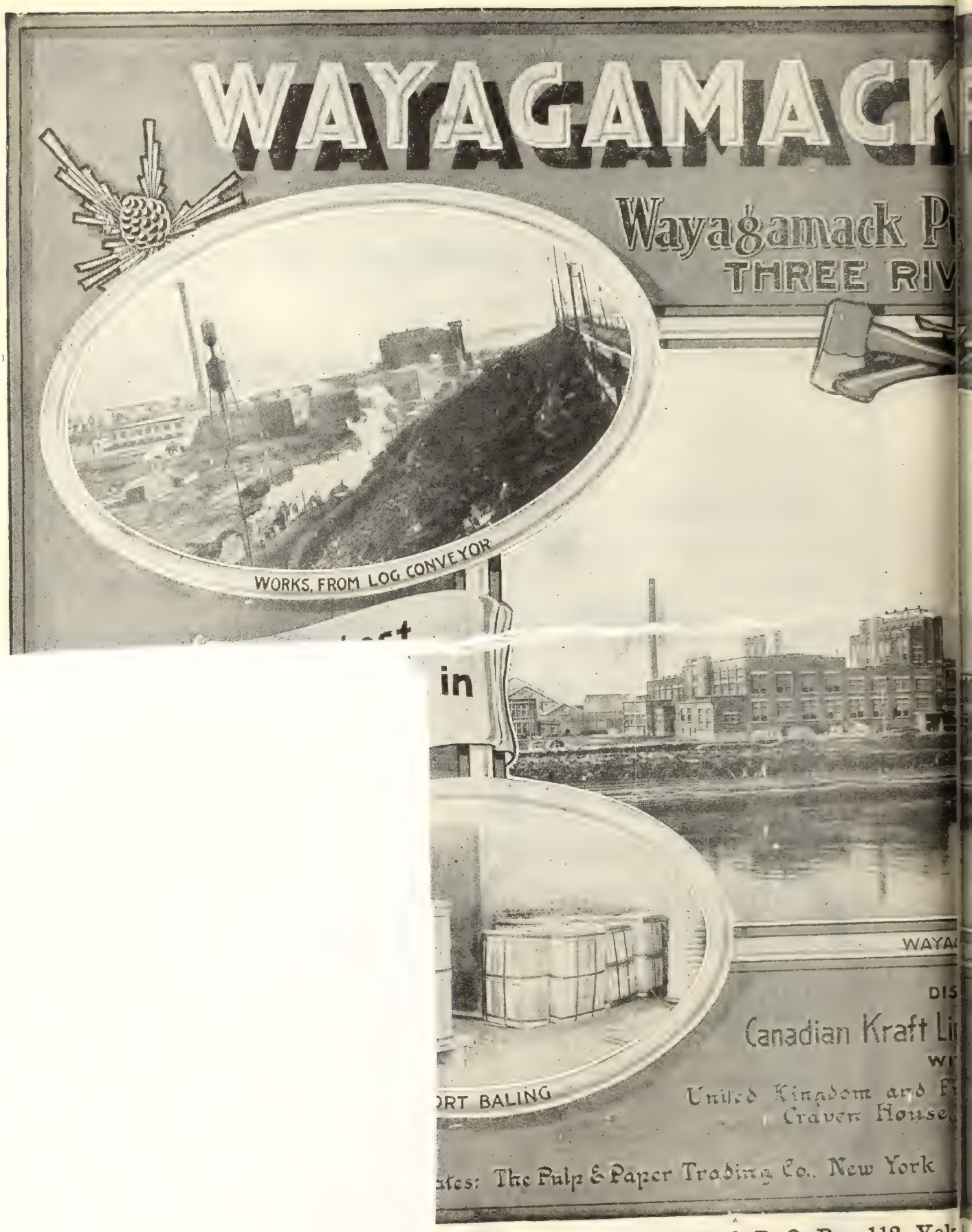
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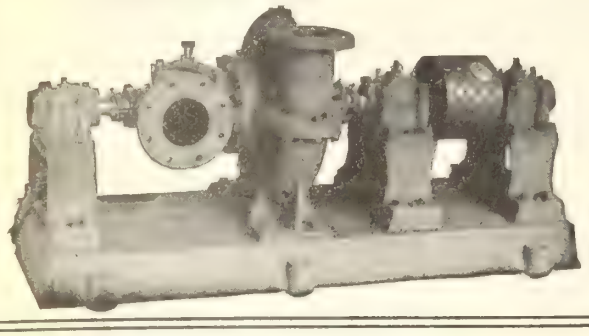
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Addresses of avertisers, whose names appear in the following classified index, may be found upon reference to their advertisements. An alphabetical index to advertisers will be found on the page facing the inside back cover. The following regulations apply to all advertisers: — One-eighth page, every issue, three headings; one-quarter page, every issue, six headings; one-half page, every issue, twelve headings; full page, every issue, twenty-four headings.

Buyers who are unable to find in the classification here given such machinery or supplies as they desire are invited to write Service Dept., Pulp and Paper Magazine, Gardenvale, Que., who can, in all probability, refer them to proper sources.

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Acid Proof Bricks & Cement:
Beveridge Supply Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.

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Stebbins Engineering & Mfg. Co.

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Northern Foundry & Machine Co.
Port Arthur Shipbuilding Co., Ltd.

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Dominion Engineering works, Ltd.
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Can. Sirocco Co., Ltd.
Ross, J. O. Engineering Co.
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Sturtevant, B. F. Co.

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Canadian Ingersoll-Rand Co., Ltd.

Antimonial Lead Pipe and Sheets:
The Canada Metal Co., Ltd.

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Hendrick Manufacturing Co.

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Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Canada Metal Co., Ltd., The
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Tallman Brass & Metal, Ltd.

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Northern Foundry & Machine Co., Ltd.

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Canadian Barker Co.
Canadian Barking Drum Co.
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Canadian Fairbanks-Morse Co., Ltd.
Carthage Machine Co.
Dominion Engineering Works, Ltd.
Hamilton, Wm. Co., Ltd.
Horton Steel Works, Ltd.
MacKinnon Steel Co., Ltd.
Pulp and Paper Mill Accessories, Ltd.
Smart-Turner Machine Co., Ltd.
Victoria Foundry, Ltd.
Walsh Plate & Structural Works, Ltd.
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Canadian Link-Belt Co., Ltd.
Can. S. K. F. Co., Ltd.
Kingsbury Machine Works.

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Canadian Fairbanks-Morse Co., Ltd.
Claflin Eng. Co.
Emerson Manufacturing Co.
Hamilton, William Co., Ltd.
Northern Foundry & Machine Co.
Port Arthur Shipbuilding Co., Ltd.
Victoria Foundry, Ltd.
Waterous Engine Works Co., Ltd.

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Beveridge Supply Co., Ltd.
Bolton W. D. Sons, Inc.

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Canadian Fairbanks-Morse Co., Ltd.
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Dunlop Tire & Rubber Co.
Gutta Percha & Rubber, Ltd.
Jones & Glassco, Regd.
McAvity, T. & Sons, Ltd.
Sadler & Haworth.
Voorhees Rubber Mfg. Co

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Graton & Knight.

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Port Arthur Shipbuilding Co., Ltd.

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Sherbrooke Machinery Co., Ltd.
Sturtevant, B. F. Co., of Canada, Ltd.

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Dominion Engineering Works, Ltd.
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McAvity, T. & Sons, Ltd.
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Hendrick Manufacturing Co.
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Northern Electric Co., Ltd.

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Norwood Engineering Co.

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Northern Foundry & Machine Co., Ltd.
Perkins, B. F. & Son, Inc.
Waterous Engine Works Co., Ltd.

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Canadian Equipment Co., Ltd.
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Northern Foundry & Machine Co., Ltd
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Pulp and Paper Mill Accessories, Ltd.
Victoria Foundry Co., Ltd.
Waterous Engine Works Co., Ltd.

Chipper Knives:
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Pulp and Paper Mill Accessories, Ltd
Waterous Engine Works Co., Ltd.

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Alexander Macpherson.
English China Clays, Ltd.
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Canadian Equipment Co., Ltd.
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Gartshore, J. J.

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Canadian Link-Belt Co., Ltd.
Canadian Mead-Morrison Co.,
Dominion Engineering Works, Ltd.
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Foxboro Co., Inc.

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Langston Co., Samuel L.

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Waterous Engine Works, Co., Ltd.

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Canadian Link-Belt Co., Ltd.
Jones and Glassco.
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Port Arthur Shipbuilding Co., Ltd.
Victoria Foundry, Ltd.
Waterous Engine Works, Co., Ltd.

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Northern Crane Works, Ltd.
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Waterous Engine Works, Co., Ltd.

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Dominion Engineering Works, Ltd.
Northern Crane Works, Ltd.

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Pulp and Paper Mill Accessories, Ltd

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Combe, F. A.
Montabone, A. J. F.
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Ferguson, Hardy.
Hamilton Gear & Machine Co.
Hardy, George.
Jenssen, G. D. and Co.
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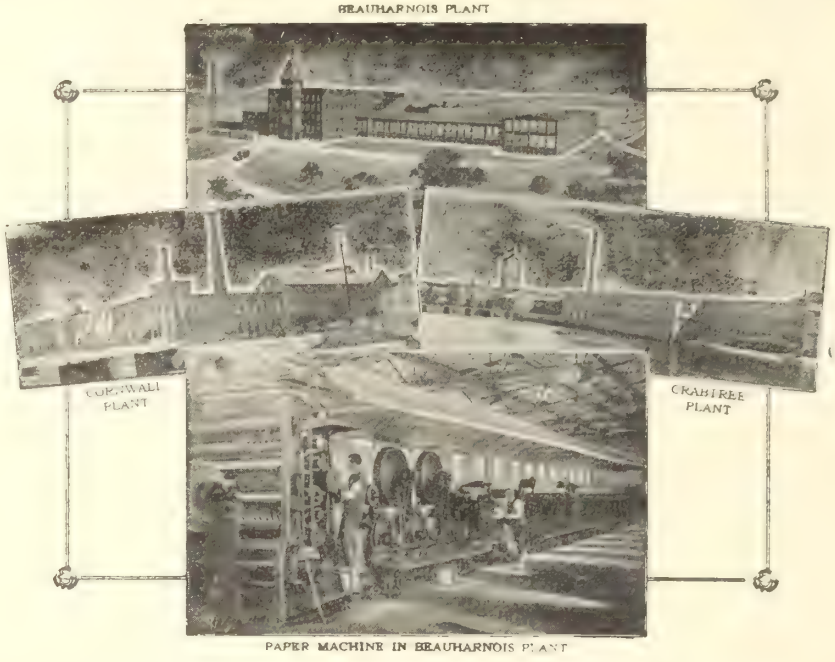
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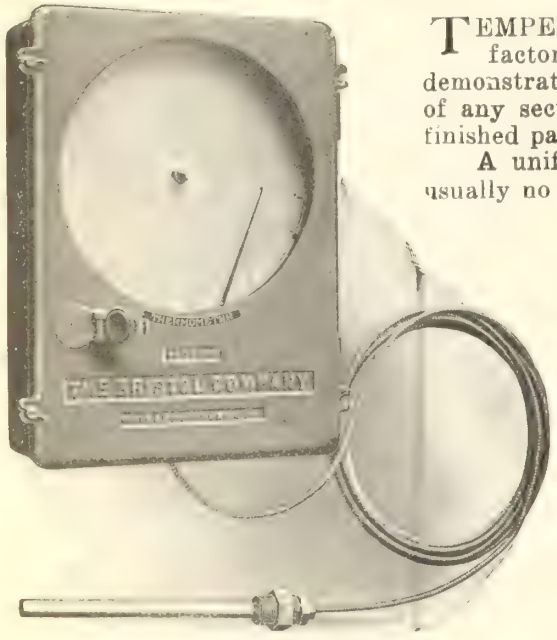
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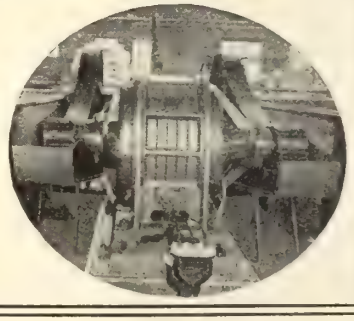


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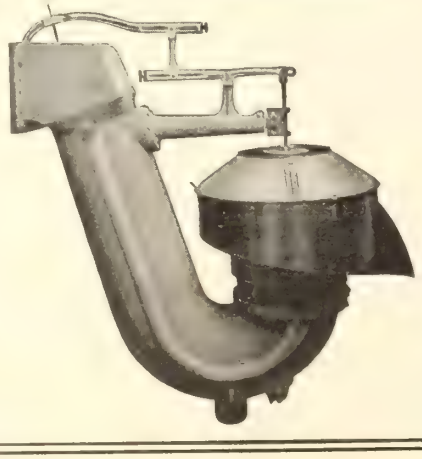
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John Date.

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Northern Foundry & Machine Co.
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Sulphate Mill Equipment:
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Hamilton, William Co., Ltd.
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Port Arthur Shipbuilding Co., Ltd.
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Hendrick Manufacturing Co.
Horton Steel Works, Ltd.
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White, W. H.

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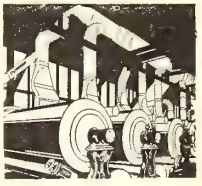
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ALPHABETICAL LIST OF ADVERTISERS

See Classified List on Page 73.

Unpaged advertisements appear in every other issue.

A

Alberene Stone Co., Ltd. . . . . .
Abitibi Power & Paper Co. Ltd. . . 84
Acer, J. A. H. & Co., Ltd. 74
American Voith Contact Co., Inc. . .
American Stone Co. 24
American Woodpulp Corporation . . 24
Ayers, Limited 11

B

Babcock & Wilcox, Ltd. . . . . .
Barrett Co., Ltd., The . . . . . .
Barber, W. J. & Co., Ltd. . . . . .
Bathurst Company, Ltd. 82
Bates & Innes, Ltd. 25
Bemis Manufacturing Association
Bertrams, Limited 68
Belgo Paper Co., Ltd., The 82
Beveridge Supply Co., Ltd. . . . . .
Black-Clawson Co., The . . . . . .
Bolton, John W. & Sons, Inc. 26
Boving, Hydraulic & Engineering . . 18
Company, Ltd. . . . . .
Bristol Co., The 80
Brompton Pulp & Paper Co., Ltd. . . 82
Burgess, E. T. . . . . .

C

Canada Metal Co., Ltd. 30
Cameron Machine Co. 3
Canadian Combustion Co., Ltd. . . 69
Canadian Barker Co. 4
Canada Foundries & Forgings, Ltd. 72
Canadian Des Moines Steel Co., Ltd. 23
Canadian Elixman Co., Ltd. 16
Canadian Equipment Co., Ltd. . . . .
Canadian Fairbanks-Morse Co., Ltd. 32
Canadian Ingersoll-Rand Co., Ltd.
Canadian Milk Products Ltd. 67
Canadian Johns-Manville Co., Ltd.
Canadian Nashua Paper Co., Ltd. 86
Canadian Paperboard Co., Ltd. . . 24
Canadian Link-Belt Co., Ltd. 6
Canadian Robert Dollar Co., Ltd. . .
Canadian Pipe Co., Ltd. . . . . .
Canadian Sirocco Co., Ltd. . . . . .
Canadian S K F Co., Ltd. . . . . .
Canadian Vegetable Parchment Co,
Limited 74
Canadian Westinghouse Co., Ltd. . . 28
Carey, Jas. L. 22
Capital Wire Cloth & Mfg. Co., Ltd. 26
Christie, George Ltd. . . . . .
City of Hull 69
Claflin Engineering Co., The 22
Clayton, Neil & Jones, Ltd. . . . . .
Combustion Engineering Corporation, Ltd. . . . . . .
Crane, Ltd. . . . . . .
Crittsinger, Burt Co., Inc. . . . . .
Cleveland Stone Co., The . . . . . .

D

Date John . . . . . .
Deitcher Brothers 87
Dept. of Lands, Forests & Mines,
Ontario 66
Dodge Mfg. Co. of Canada, Ltd. . .
Dominion Belting Co. . . . . .
Dominion Engineering Works, Ltd. 29
Dominion Oxygen Co., Ltd. . . . . .
Donnacona Paper Co., Ltd., The . . 24
Don Valley Paper Co., Ltd., The . . 24
Downingtown Mfg. Co. 25
Dryden Paper Co., Ltd. 24
Dunlop Tire & Rubber 68
Dunham, C. A. Co. . . . . .

E

Elixman Paper Core Co., Inc. 16
Elk Fire Brick Co. of Canada, Ltd. 80
English China Clays, Ltd. . . . . .
Engineering & Machine Works of
Canada, Ltd. . . . . .

F

Ferguson, H. S. 23
Ford, J. & Co. . . . . .
Foundation Co., Ltd. 22

G

Galt Knife Co., Ltd. 27
Garden City Paper Mills, Ltd. . . . 74
Geigy Co., Inc. 72
Goldie & McCulloch Co., Ltd. . . . .
Goold, Shapley & Muir Co., Ltd. . . 26
Gottesman, M. & Co. 29
Grasselli Chemical Co., Ltd., The
Graton & Knight Mfg. Co., The . .
Griswold & Co. 26
Gutta Percha & Rubber, Ltd. 12

H

Hamblet Machine Co. . . . . .
Hamilton Gear & Machine Co. . . . 19
Hamilton Wm. Co. of Canada, Ltd. 89
Hans Renold of Canada, Ltd. . . . .
Hardy, George F. 22
Harland Engineering Co. of Canada,
Limited 1
Hay Knife Co., Ltd., Peter . . . . .
Hendrick Mfg. Co. 68
Hercules Powder Co. 19
Holliday, L. B. & Co., Ltd. 78
Huestis, A. M. 86
Hydraulic Machinery Co., Ltd. . . . 2

I

Ideal Patents Corporation 20
Industrial Engineering Co., Ltd. . .
International Business Machines
Co., Ltd. 23
International Pulp Stone Co., The 27
Interlake Tissue Mills, Ltd. . . . .

J

Jenkins Brothers, Ltd. 21
Jenssen Co., G. D. 23
Johnson Wire Works, Ltd., The . . 30
Jones & Glassco, Regd. 86

K

Kalbfleisch Corporation, The 86
Kander Paper Stock Co., Ltd., The 24
Kenwood Mills, Ltd. 13
Kimball, Herbert S. 22
Kingsbury Machine Works . . . . .
Klipstein & Co., Ltd., A. 67

L

Lacey, James D. & Co. . . . . .
Largeloef, Trading Co. 63
Langston, Samuel M. Co. 27
Laurentide Co., Ltd. 84
Lawrence Machine Co. 72
Lombard & Co. Inc. 27

M

Macpherson Co., The A. 16
Management Engineering & Development Co., The 23
Mead, Patton & Co., Inc. . . . . . .
McAvity T. & Sons, Ltd. 32
McKinnon Steel Co., Ltd. 87
Mills Works & Machinery, Ltd. . . . 80
Miramichi Quarry Co.,, Ltd. The . . 69
Montabone J. A. F. 22
Montreal Locomotive Works, Ltd. .
Morrison, J. L. Co. . . . . .

N

National Paper Stock Co., The 24
Niagara Wire Weaving Co., Ltd. The 74
Northern Crane Works, Ltd . . . .
Northern Electric Co., Ltd. . . . . .
Northern Foundry & Machine Co. . .
Norwood Engineering Co. of Canada,
Limited 68

O

Oliver Continuous Filter Co. . . . .
Ontario Wind Engine & Pump Co.,
Limited 68

P

Pacific Coast Pipe Co., Ltd. . . . . .
Patton, Mead & Co., Inc. . . . . .
Peacock Brothers, Ltd. . . . . .
Penmans Limited 29
Pochin, H. D. & Co., Ltd. 16
Pollack Bros. & Co., Ltd. . . . . .
Port Arthur Shipbuilding Co., Ltd. 28
Porritts & Spencer Co Ltd. . . . . .
Price Bros. & Co., LtLd. 76
Price & Pierce, Ltd. 82
Provincial Paper Mills, Ltd. . . . .
Pusey & Jones Co., The 18
Pulp & Paper Trading Co., The . .
Pulp & Paper Mill Accessories, Ltd. 85

Q

Quarries, C. & M Co. 22

R

Reed, Geo. W. & Co., Ltd . . . . . .
Relph, Darwen & Pearce . . . . . .
Rolland Paper Co, The . . . . . .
Ross Engineering of Canada, Ltd. 7-27
Russell Brothers 72

S

Sadler & Haworth 2
Sewall, Jas. W. 22
Sherbrooke Machinery Co. 9
Smallwood Stone Co., The 24
Smallwood Low Stone Co., Ltd. . . 27
Smith Foundry Co., Ltd., The . . . .
Smith Howard Paper Mills, Ltd. . . 78
Spanish River Pulp & Paper Mills,
Limited 86
Sterling Electrical Co., ... 22
Stinson-Reeb Buliders' Supply Co.,
Limited . . . . . .
Stebbins Engineering & Mfg. Co . . 17
St. Maurice Paper Co., Ltd. . . . . .
Sturtevant Co. of Canada, Ltd. . . 87

T

Tallman, Brass & Metal, Ltd. 14
Taylor, J. A. . . . . .
Taylor, H. S., Ltd. 23
Texas Gulf Co. . . . . .
Ticonderoga Machine Works . . .
Tippett & Co., Ltd. 10
Tyler, W. S. Co., The 27
Trimbey Machine Works . . . . . .

U

Underfeed Stoker Co. of Can., Ltd.
Union Screen Plate Co. of Canada,
Limited 87
Union Sulphur Co., The 30
United Wire Works, Ltd. 10

V

Vera Chemical Co. of Canada 72
Victoria Foundry Co., Ltd. 21
Voorhees Rubber Mfg. Co. 72

W

Wallace, John H. & Co., Ltd. 22
Wardlaw, T. D. & Son 72
Walmsley, Charles & Co., Ltd. . . 14-15
Warren, Kenneth L. 22
Warwick Woollen Mills, Ltd. 28
Watford Engineering Works, Ltd. 8
Waterous Engine Works 90
Wayagamack Pulp and Paper Co.,
Limited 70-71
Weir, G. & J. (Canada), Ltd. . . . .
Westbye, P. P. 17
White, W. H. 28
Whyte, William 28
Wilson Patterson Co., The . . . . .
Wood Pulp Trading Co., Ltd. . . . 64

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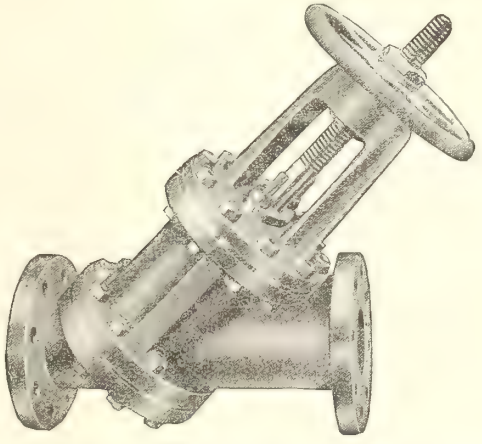
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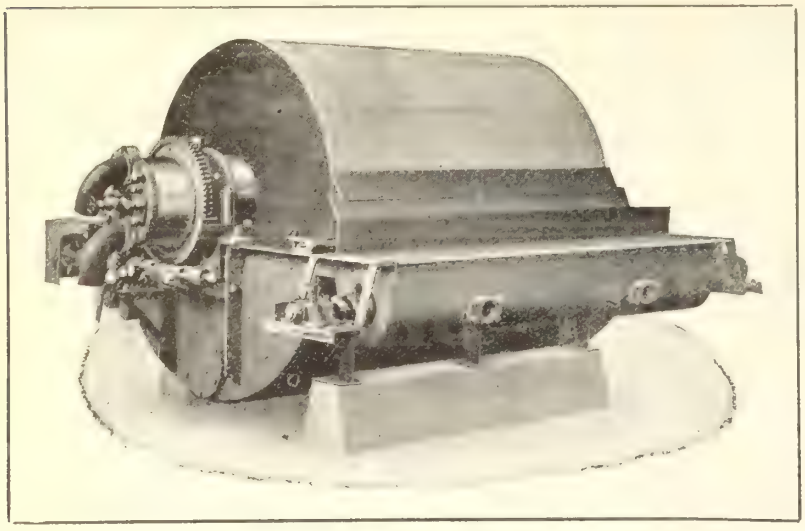
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John Van Brunt, Chief Engineer, Combustion Engineering Corporation.
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T. A. Marsh, Chief Engineer, Green Engineering Co.
Samuel McEwen, Chief Engineer, Underfeed Stoker Co., London, Eng.
I. Beuzit, Chief Engineer, Societe Anonyme Des Foyers Automatiques.

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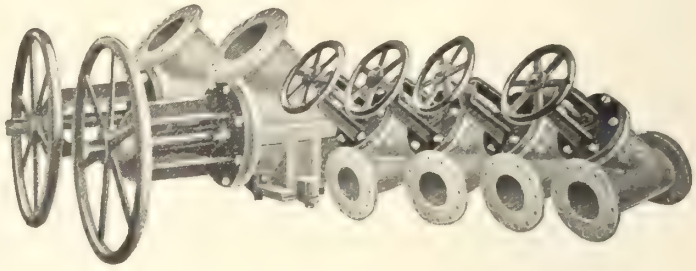
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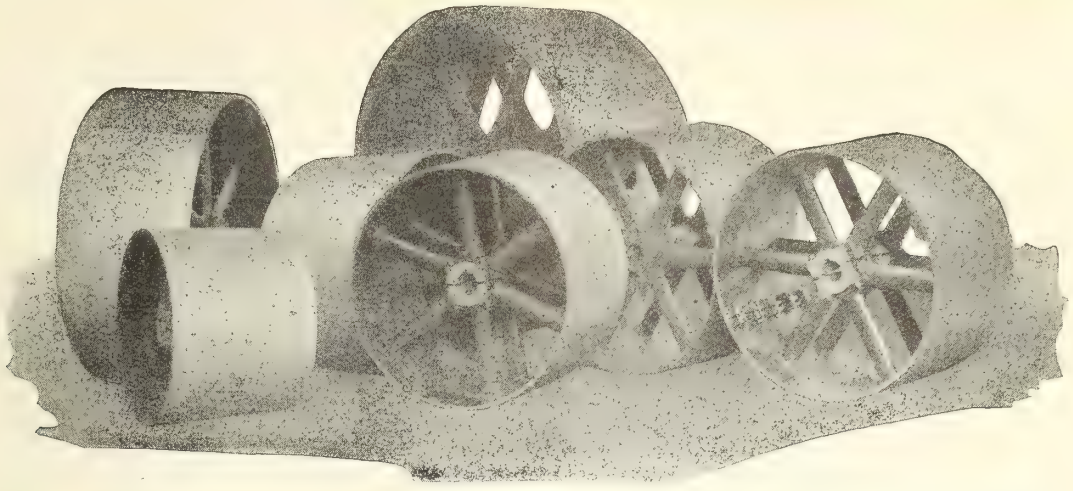
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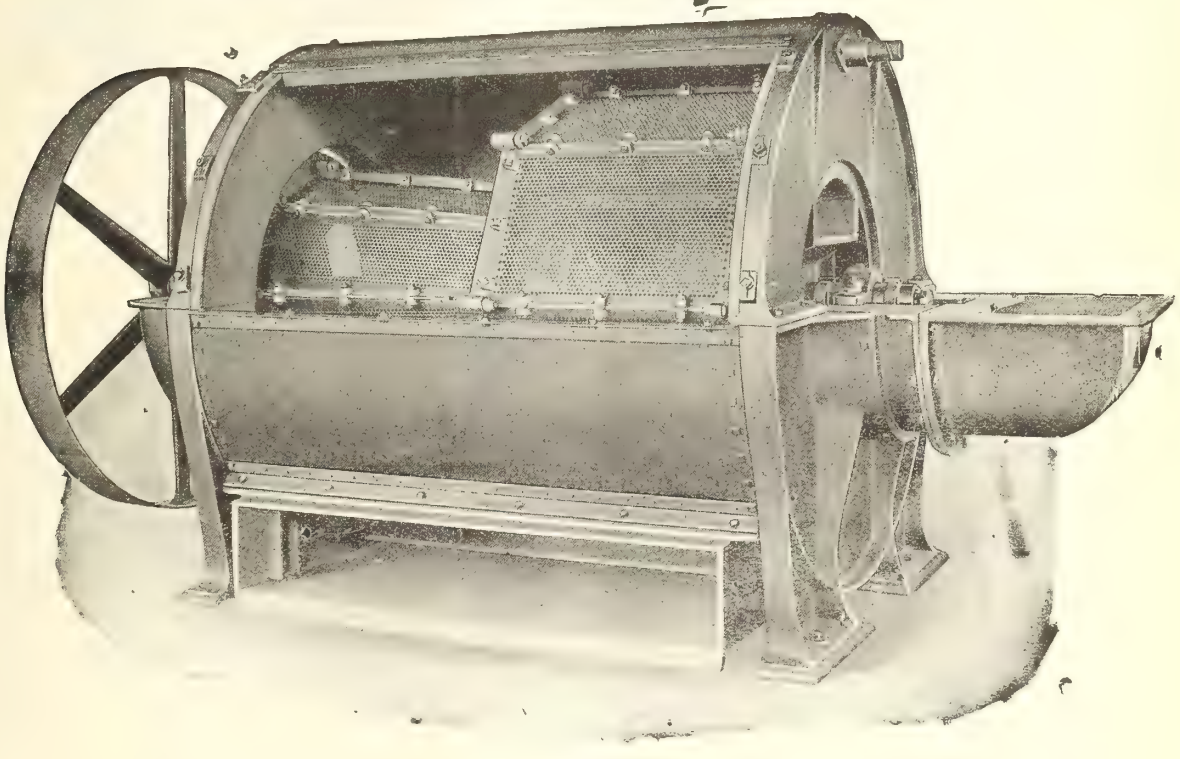
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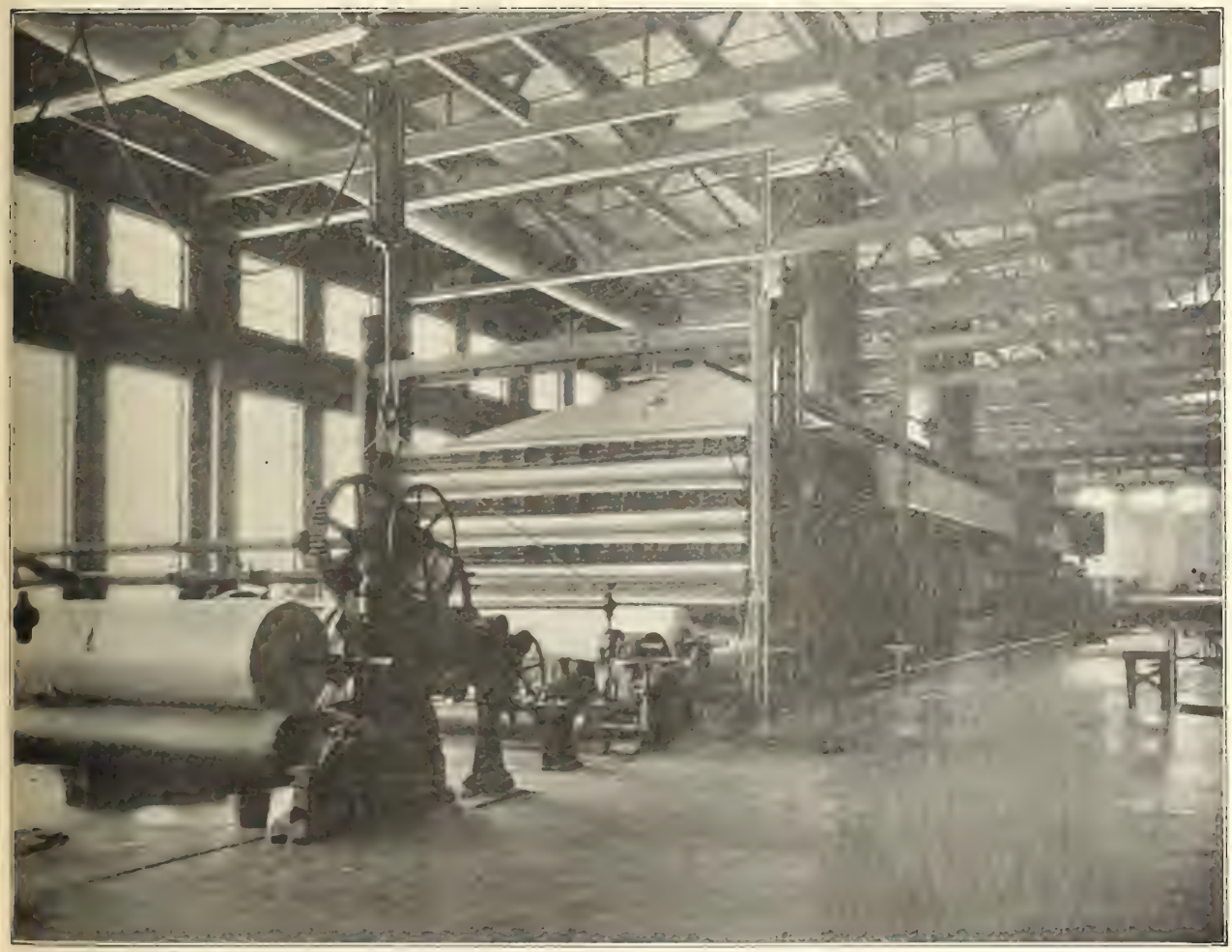
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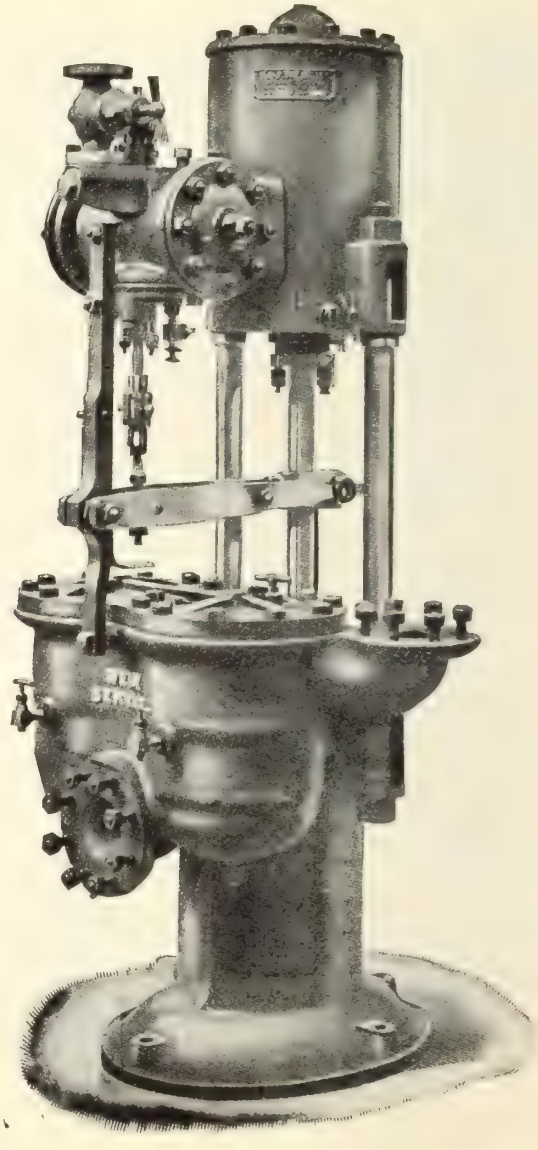
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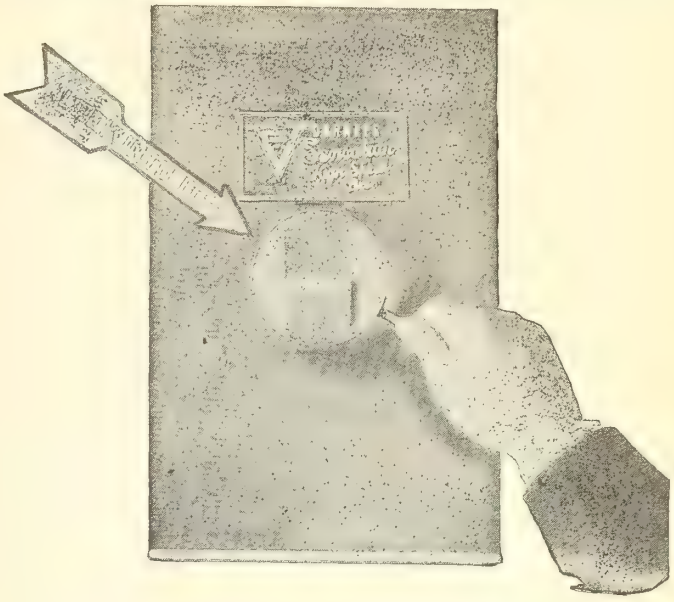
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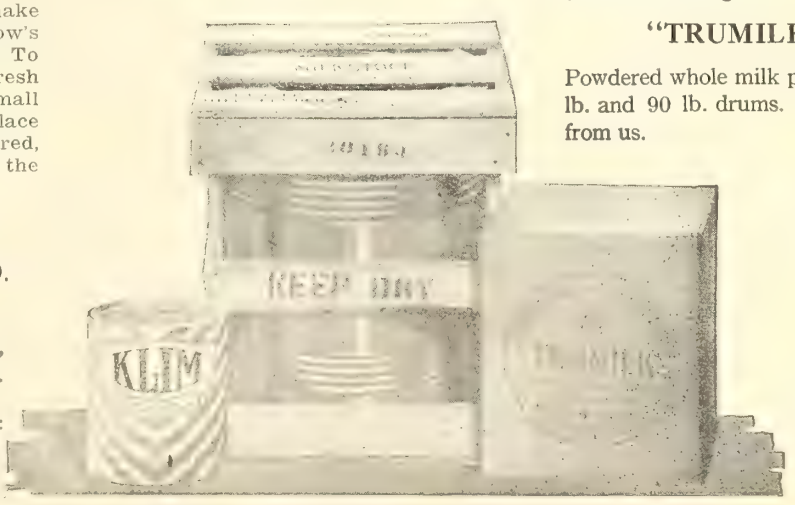
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Ontario is traversed east and west by three great transcontinental railways, affording excellent transportation facilities.

Ontario's natural resources of mineral, pulpwood, timber and water powers are unequalled in the Dominion of Canada.

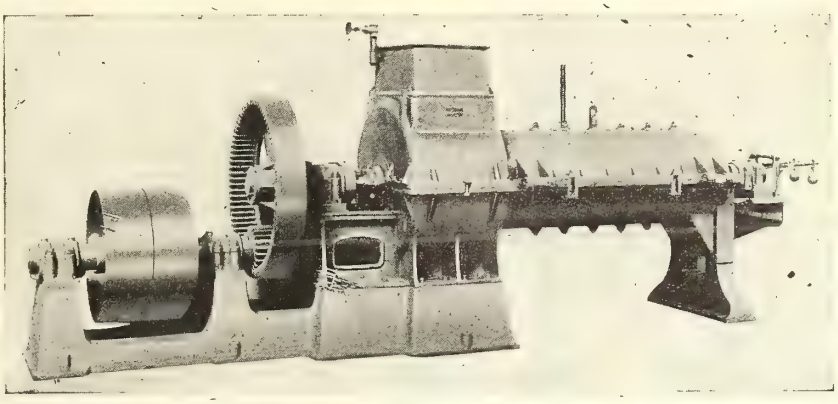
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MINISTER OF LAND AND FORESTS
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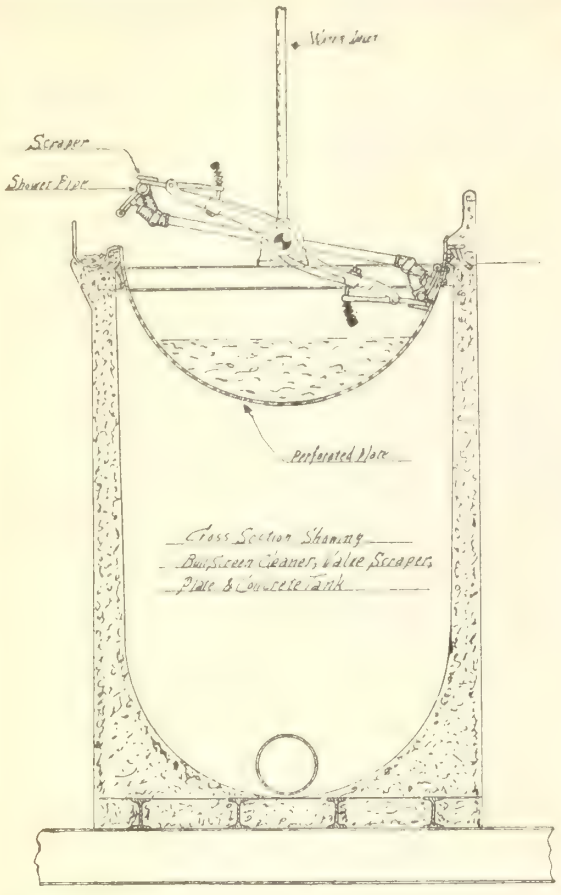
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Operating Manager.

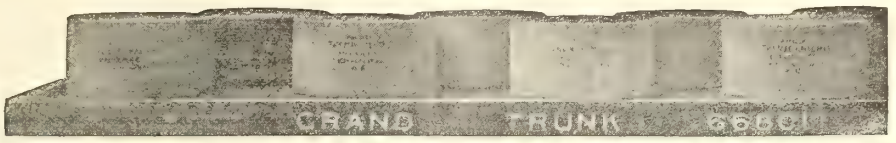
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All Sizes including Magazine Grinder Stones



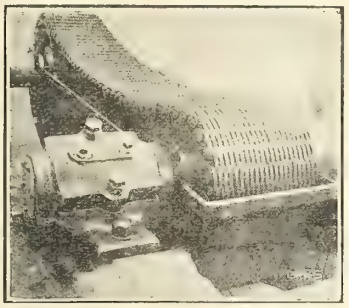
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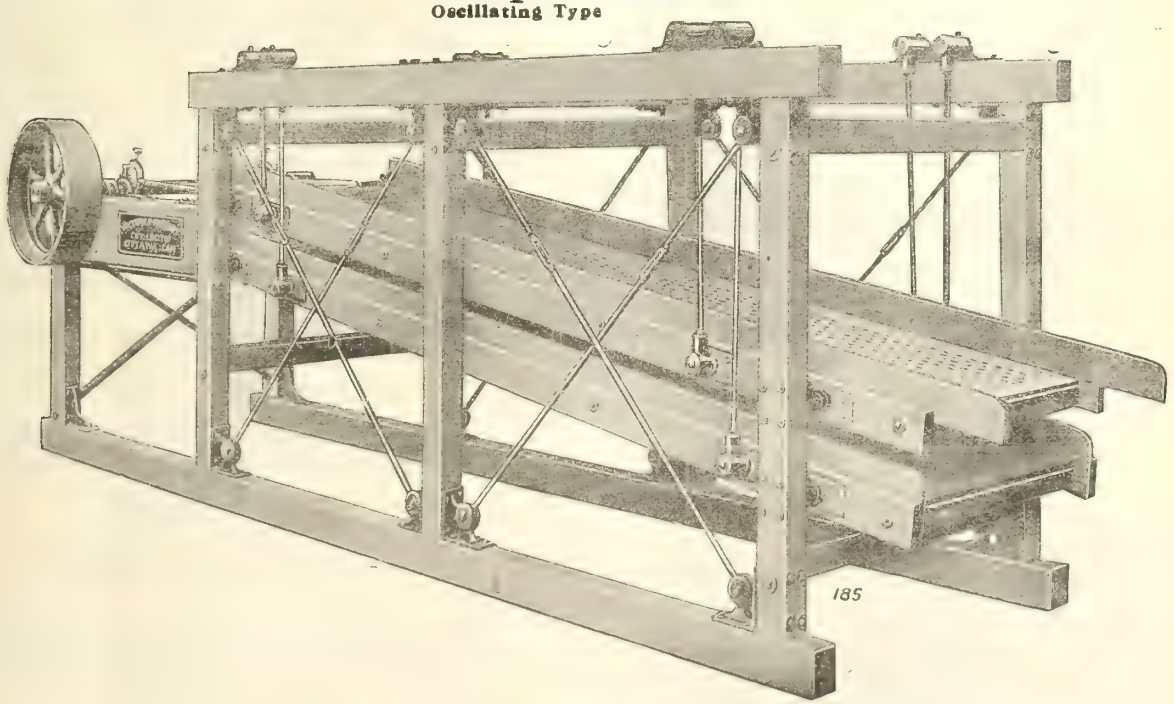
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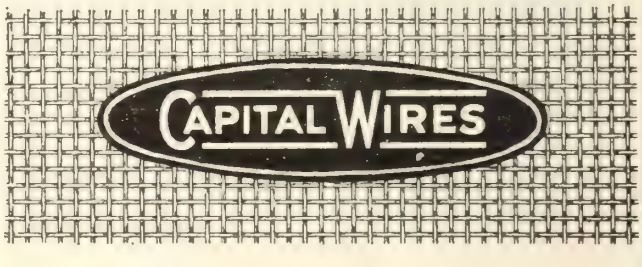
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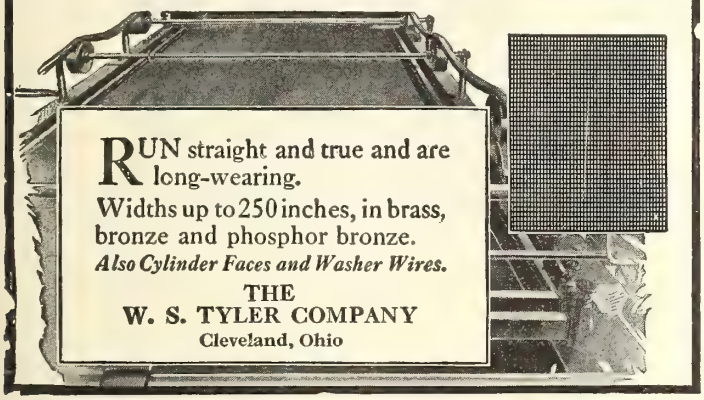
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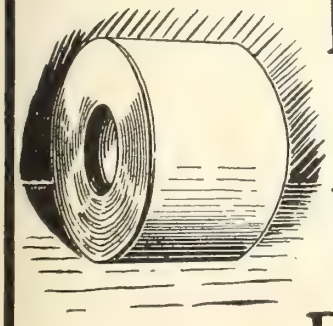




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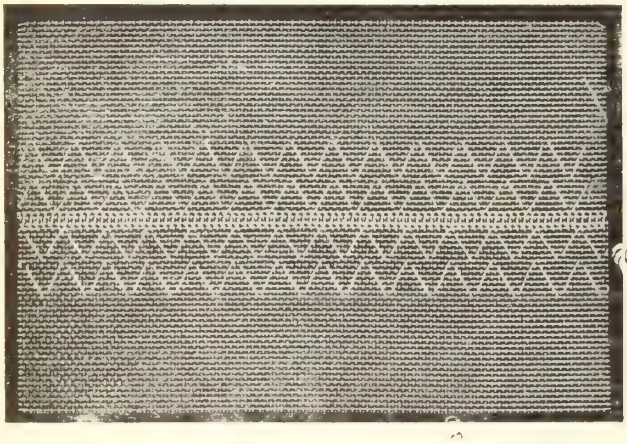
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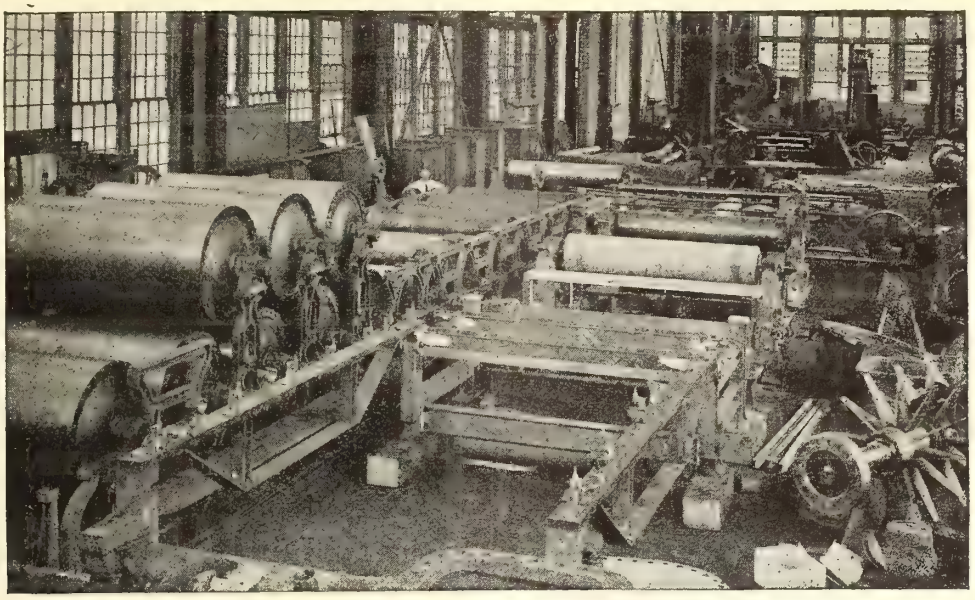
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A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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TABLE OF CONTENTS

Editorial:

In days of old 523
British Empire Exhibition 523

Special Features:

Qualities and properties of principal grades of paper 525
A new all-electric paper mill 529
The Technical Section 536

News of the Industry:

How the Sales Tax applies to paper 524
Abitibi celebrated record 532
St. Maurice Paper Co.'s strong position . . 535
Pulp and paper news 538
Presented safety shield 538
Western Quebec Paper Mills Ltd. 539
Brompton pays more on arrears 539
Course of paper prices in England 539
British trade news 540
United States notes 541
New pulp mill for Quebec 541
Link-Belt Pittsburg office moves 544

Institute Items:

Our Japanese students 528
Student asks a question 528
The end of the drifter 528

Miscellaneous Information:

Progress of industrial research in Canada. 528
Paper making in Japan 532
Will Canada remain last in the race 532
Average yields of ground wood pulp 535
Fuel value of wood waste overestimated . . 535
Review of recent literature 536

The Woodlands Section:

Parliament knows forest situation 533
Forest fires deplored by the farmers 534
"Disaster awaits" says Sir Lomer 534
Approved of permit system 534

The Markets:

Canadian trade conditions 542
New York markets 542

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EDITORIAL

IN DAYS OF OLD

It is a long, long time since Volta, Faraday, Gibbs, Maxwell, Helmholtz and many others were trying to find the fundamental laws underlying and governing the nature and behavior of electricity. Even before the invention of the paper machine by Robert, and its development by the Fourdriniers, the earlier of these investigators were concentrating their master minds in earnest endeavor and with determined effort to discover the mysteries of one of the greatest forces now harnessed for the manufacture of pulp and paper.

Michael Pupin, whose researches form in large part the basis for successful long-distance telephone communication, to mention only one field of his work, has written for *"Scribner's Magazine"* a most interesting account of his search in England, Germany and France for fundamental knowledge in the science of Physics and particularly in the field of Electricity. In those days the wisest scientists in the world knew less about electricity than does the 14 year old boy today with his own radio set. But the tireless, consecrated work of those men searching, as Pupin believed himself to be, for the meaning of the laws of God in Nature has made possible the wonderful developments that we enjoy today. The editor of this magazine happens, at the same time, to be in charge of the editorial work on the set of textbooks on the Manufacture of Pulp and Paper, which is being prepared under the auspices of the Industry, and just now his attention is focused on the description of the sectional Electric Drive for Paper Machines, and in the study of the delicate, yet positive, automatic, and instantaneous regulation of the paper machine drives, the thought persisted that the paper industry would not be enjoying these refined developments of mechanical perfection without the untiring efforts and the often obscure labors of such men as those we have mentioned. It is true that in time their message and their discoveries came to the attention of some of their fellow scientists, but even then the significance of their work was but partially appreciated; but they continued to experiment and to think. In those days there were but few books, and but few scientific magazines for the dissemination of new found knowledge; the discovery of important facts by one worker might be entirely unknown to a fellow worker in the same field only a few hundred miles away. At that time there were not the opportunities for the scientific conventions and the discussion of new discoveries such as we have now with resulting inspiration and guidance to many workers in the same field. Nor did the investigators have the facilities for laboratory work that men of our day enjoy, but they persisted just the same, and the result of their work formed the basis of our modern progress. It required the accumulation of the knowledge or decades of research before advance became particularly rapid but we are now going ahead so fast by virtue of the development of the mechanical sciences that a speaker at the banquet of the Technical Association in New York was moved to express a fear that our personal characters were not growing fast enough to keep pace.

It is a cheering and encouraging matter however, to feel that the self sacrificing devotion to scientific research and investigation was not confined to the intellectual giants of past generations, but that we have men today who are taking up the burden where others laid it down, and are selecting appropriate parts from the contributions of many of their predecessors, are putting them together and working out new scientific structures with new and greater degree of service to their fellow men. It is not only that researchers of our day are giving constant and conscientious service, but in a large number of cases their individuality is entirely unknown to those who benefit most from their work. The spirit of co-operation pervades the organizations where these men are devoting their labors, and the result is the wireless telephone, or an improved type of paper machine drive.

Similar research work is being done in other fields and the Pulp and Paper Industry is reaping the benefit indirectly. It is time, however, that the Pulp and Paper Industry, for itself, were undertaking a good deal more in the way of research on the very important and pressing problems relating to this industry.

BRITISH EMPIRE EXHIBITION

Plans for Canada's participation in the British Empire Exhibition to be held in Wembley Park, near London, England, from April 20 to October 31 next year, are practically completed, says the *Commercial Intelligence Journal.*

Canada expects to have an exhibition worthy of its name. The Canadian Government exhibit will be under the direction of the Minister of Trade and Commerce, who for this purpose will have under his jurisdiction the staff of the Dominion Government Exhibition Commissioner.

The Department of Trade and Commerce therefore desires, as a preliminary announcement, to state that within the grounds of Wembley Park, where the great exhibition is to be held, will be constructed the Canadian Building. The Empire Exhibition Executive will also construct a special building to be used as a restaurant, in which products of the Empire only will be used, provided they can compete successfully in quality and price with similar foreign commodities.

It is anticipated that the exhibition will be visited by millions of people and a unique opportunity will thus be afforded for manufacturers and producers of foodstuffs throughout the Empire to advertise their products to the world.

Arrangements have not yet advanced sufficiently to permit of any detailed announcement, but it is desirable that it should be known among Canadian exporters of foodstuffs that the Department of Trade and Commerce is prepared in every possible way to assist Canadian suppliers of foodstuffs throughout the period of the exhibition. For this purpose it is suggested that firms interested, and who are not now represented in London or elsewhere in the United Kingdom, should arrange to appoint agents in London, to whom all information can be provided so that on short notice during the period of the Exhibition prices and supplies can be made available.

The Department of Trade and Commerce will provide a special officer detailed in London who will act as liaison officer between Canadian suppliers of foodstuffs and the authorities in charge of the restaurant.

Canadian firms, therefore, interested in supplying Canadian goods to the exhibition authorities, should communicate with The Deputy Minister, Department of Trade and Commerce, Ottawa, giving the names and addresses of their agents or jobbers in the United Kingdom and full information regarding the foodstuffs they can supply, so that arrangements may be made well in advance. The department will also welcome helpful suggestions.

Other features of the Exhibition will be dealt with from time to time in these columns.

HOW THE SALES TAX APPLIES TO PAPER

The new Sales Tax as announced by The Minister of Finance in his recent budget is causing a lot of discussion amongst the members of the Canadian Paper Trade Association in Toronto and elsewhere. In an interview with the Pulp and Paper Magazine of Canada, a leading Toronto paper dealer had this to say on the subject of the Sales Tax in its relation to the merchant handling printing papers:

"The outstanding object of the new six per cent Sales tax is to prevent the pyramiding complained of in the former Sales Tax, the workings of which we have heard discussed. The jobber of printing papers, without complaint, submitted to being discriminated against in the operation of his business by the mills being able to sell a licensed manufacturer at two and one quarter per cent less tax overhead than its jobber was able to do, and now we are being cheerfully informed from all sides that as the new tax is to be collected at the source, from the manufacturer, the jobber of printing paper will, of course, have to pay this tax on his purchases. There seems to be doubt in other quarters, but this is the readily expressed opinion as to the Government intention—but why?

"Printing paper, as carried in stock by merchants is in every sense in the meaning of the Act an unfinished product, being conveniently colated for passing along to the printers, who, in respect to the Act, are manufacturers when doing a business of over $10,000 a year. And our merchandize can be considered subject to the collection of six per cent tax only when sold to unlicensed printers, or to a private plant for their consumption after such processing as they may add; in other words when sold to other than a licensed manufacturer.

"The Act provides that tax on materials used in the manufacture of goods will not be paid until the completion of the manufacture, to ensure that only the tax will be paid on one particular class of goods.

"Where is the source of production of, say, your letter heads, office forms or your catalogues? The manufacturer of course, who is the printer, makes such finished products from the raw material, which we, the printing paper merchants, distribute fo them.

"The printing paper merchant could not exist if called on to pay the six per cent tax on purchases, as the big percentage of his business is done with printers who, under this Act are rated as manufacturers, and could, beyond a doubt, buy from the manufacturer without a tax when such paper is to be further processed.

"The distribution of printing paper is somewhat different from that of distributing wrapping paper or other lines which are used by the ultimate consumer in the same state of processing as when they leave the mill. Nothing carried in a warehouse by any member of our branch of the Association should be subject to tax, except when sold from warehouse to other than a licensed manufacturer printer, when a six per cent tax would be collected for transmission to the Government. If printing paper passes through the jobber, who, virtually is the mill salesman, it should have no pyramiding of the tax, that is, printing paper should go from the mill to a licensed wholesaler free from tax; from a licensed wholesaler to a licensed printer free from tax, and the licensed printer should collect and pay the Government six per cent on the completed work, including paper as sold to him. But should the jobber sell to an unlicensed printer, or other, he then should collect and be responsible for six per cent on such sales.

"If a mill sells direct to the consumer (who would buy as a separate item the added work of the printing) six per cent would be charged, or if sold to a licensed printer, no tax would be collected as the printer, being a manufacturer, when licensed, would be responsible for the tax, after adding his process to make the paper into form as used by the consumer.

"The printing paper merchant may be offered a rebate of the tax when goods are sold to those holding manufacturer's license, but this would be undesirable as it would mean the paying of the six per cent on purchases and waiting indefinitely for the rebates.

"This new sales tax is evidently intended to be fair to all, but it is up to merchants of printing paper to make their case clear so that no misunderstanding will come up later."

The work of the world is done mostly by ordinary ability, while geniuses are waiting for splendid opportunities.

Quality and Properties of the Chief Grades of Paper

By E. ARNOULD

(Translated from *Le Papier* xxv, 385-389, Sept. 1922, by A. Papineau-Couture.)

Copper Engraving

This requires an all rag pulp (cotton), which must be snow-white. No color, size, nor filler is added. Weight per square meter 300 to 500 grams. The sheets must be of even and uniform thickness. The formation must be even and full. The stock should not be beaten too short; it must not be hydrated, but rather free. Drying should not be carried out at too high a temperature. The sheets must be cut absolutely square. The grain should be even and free from deformation. Yellowing of the paper during drying should be avoided, as also heating of the stock during beating and contamination by small particles of iron. In order to ensure maximum durability, all traces of chlorine and of free acid must be removed.

Unsized Lithographic Papers for De Luxe Editions

Requires an all rag pulp (cotton) which should be snow-white. The paper is unsized and uncolored, and should have no very marked grain. Weight per square meter 120-400 grams. The formation should be even and full. Other requirements as above.

Sized Lithographic Papers for Fine Printing

All rag, linen and cotton. Well-sized for printing; colored with fast colors. There should be no grain. Slight machine finish. Very full formation. Filler retained in the paper 8 to 10 per cent. Very even and regular thickness of the sheets, which should be cut absolutely square. Weight per square meter 90-350 grams. Other requirements as above.

Paper for Mounting Engravings

A mixture of pulps is used, which must be very white. It is never sized. The filler retained in the paper should be between 14 and 16 per cent. Very little color is added. The grain must be quite pronounced on one side of the sheet. Weight per square meter 500 to 600 grams. The paper should have a fair amount of rattle and should lie quite flat. The stock is beaten to medium length and should be kept free. The paper should not be wound on too small a core, which might cause it to break longitudinally. The paper should be as though blown; i.e., very compressible.

Halftone Engraving

The paper is prepared from rags and chemical pulps, which must be absolutely white. It must be well sized, have a good and full formation, and be fairly opaque. A small amount of fast color can be used, and it should retain from 16 to 18 per cent of filler. It is given a slight machine finish, and is super-calendered. Weight per square meter 70 to 110 grams.

Paper for Dictionaries, Memo-Pads, Diaries

Composed of rags, chemical wood pulp, and esparto. Well sized. Either blueish or dull white. Even formation; very opaque; ordinary calendering; fair strength; filler 12 to 20 per cent. weight per square meter 40 to 80 g.

Featherweight Printing Paper

Composed of chemical pulps, rags, and esparto; half-sized; dull white or blueish; fairly good formation; very slight machine finish; little or no fillers; very bulky; weight per square meter 75 to 120 grams. Should not fuzz on the printing presses. The cheaper kinds contain 20 to 50 per cent. of groundwood and 8 to 12 per cent. of filler.

Featherweight Writing Paper

Much the same as the previous, but requires more care in manufacture. It should have more bulk, the stock should be beaten quite free, and it should have little or no finish.

Ordinary Printing Paper

Composed of chemical and mechanical pulps; half-sized; blueish white or otherwise suitably tinted; ordinary formation; medium opacity; 16 to 22 per cent. of filler; should preferably be flexible and lie flat; and should be given a fairly good machine finish.

Paper for Chromo-Lithography

Composed of chemical pulp, cotton, and esparto; white, blueish, or tinted; should be very supple, and at the same time have a certain amount of inertia; fair degree of sizing; very even formation; 18 to 22 per cent. of filler; free from fuzz; super-calendered; the paper should be fairly opaque and very clean; weight per square meter 120 to 400 grams. The stock should be beaten rather short.

One- Ply Bristol

Composed of mixed stocks, including bleached straw; white or tinted; hard sized; very little filler if any; very even formation; stiff, plenty of rattle, and considerable transparency; does not stand folding; beaten short and wet; machine finished; should lie absolutely flat.

Bristol Board

Same as above, but obtained by pasting together two or more sheets; formation quite full; very transparent; heavily calendered; does not fold or break as readily as one-ply bristol.

Maps

Very white paper, composed of various stocks, slightly blueish; little or no filler; well sized; formation slightly irregular; beaten to medium length of fiber; weight per square meter 70 to 180 grams; high folding strength in both machine and cross directions; medium calendering; sheets should lie quite flat; the paper should be soft but stand a fair amount of handling.

Paper for Phototype Work

Mixture of strong rags and strong chemical wood pulp; very white or slightly blueish; extra hard sized; beaten of medium length and hydrated; very even thickness; even formation; paper should have a good rattle and be hard and strong; it is either calendered or made with a pronounced grain; it should be relatively soft to take impressions properly; mineral fillers 8 to 10 per cent.; weight per square meter 100 to 300 grams; the grain of the wire should appear as little as possible.

Drawing Paper

Composed of hard chemical wood pulp and strong rag stock; no fillers; extra hard sized; considerable

resistance to erasure; beaten very long and very wet; surface with a very pronounced grain; very seldom calendered; sheets should lie quite flat; formation regular; weight per square meter 150 to 220 grams.

Bond

Composed of very strong rag stock or chemical wood pulp; blueish white; extra hard sized; slight calendering, leaving the grain still apparent; should be hard and strong (in both machine and cross directions) and have a good resistance to both folding and erasure; formation regular; preferably opaque. The stock should be beaten long and wet, weight per square meter 80 to 200 grams; breaking length 3,000 to 5,000 meters (average); filler 8 to 12 per cent.

Writing

The composition will vary according to the price, and may include chemical wood pulp, esparto, aspen, and even groundwood; blueish white; filler 12 to 18 per cent; very full and even formation; should be opaque, stand a reasonable amount of handling, and have a slight amount of rattle; calendering medium; considerable bulk; beaten slightly wet; hard sized; stock should be quite pure and free from lumps, etc.; weight per square meter 48 to 90 grams.

Parchmentized Paper

Composition variable, but should always be prepared from strong pulps; blueish or dull white, such colors as are used being fast; slight engine sizing, followed by tub sizing; very opaque; beaten very long and very wet; free from lumps, etc.; machine finished, or lightly calendered; weight per square meter 55 to 75 grams; average breaking length 4,000 to 6,000 meters. In a well prepared paper tub sizing increases the average breaking length by about 1,400 to 1,500 meters. Avoid the formation of wrinkles during drying. The elongation and shrinkage during drying must be taken into consideration. Avoid making the paper glassy, and do not refuse the broke.

Imitation Japan Paper

Composed of hard rags, hard chemical wood pulp, and esparto. Dull white; uneven formation; beaten long and very wet; ordinary sizing; little or no filler, not over 5 to 6 per cent; lightly calendered; very flexible and strong; breaking length 4,000 to 6,000 meters; has a very characteristic appearance; weight per square meter 100 to 200 grams; is sometimes required with deckle edge; high folding resistance.

Coating Stock

Composed of strong but flexible stock; well sized; blueish or dull white; fairly full formation; beaten rather long, without hydration; free from lumps or hard particles (sand, grit, etc.); little or no finish; 12 to 18 per cent of filler; very bulky; weight per square meter 60 to 120 grams; the sheets should have inertia to prevent curling after coating.

Book Covers

Composed of chemical wood pulp and rags, or chemical wood pulp and groundwood; as white as possible, with slight blueish tinge; 20 to 30 per cent. of filler; high opacity; strength of no account; beaten short and free; absolutely free from lumps; weight per square meter 50 to 70 grams.

Typewriter Paper

May be composed of rags and chemical wood pulps in various proportions; slightly parchmentized; either blueish white or colored; thoroughly engine sized; slight machine finish; beaten to medium length with a fair amount of hydration; must lie perfectly flat and be free from wrinkles; high bursting strength; weight per square meter 33 to 60 grams; opaque; when calendered, avoid making the paper glassy.

Sized Onion Skin

Made from very strong wood pulps, to which is added 15 to 25 per cent. of esparto pulp or else hard rag stock; sized with 4 per cent of rosin; no fillers; made in various colors, principally white or bright colors; frequently calendered; should lie flat and be free from wrinkles and holes; weight per square meter 18 to 32 grams.

Unsized Onion Skin

Nearly always made entirely from hard rag stock, to which is sometimes added a small proportion of soda pulp; neither size nor fillers; weight per square meter 18 to 32 grams; seldom calendered; made in all colors; formation should be very even and regular; sheets should lie quite flat and be free from wrinkles and holes. It is sometimes used for letter books, in stereotype works, for protecting blanks, and in the manufacture of celluloid.

Granite or Mottled Papers

Composed of rag stock and good grades of chemical wood pulp; medium sized; contains 10 to 15 per cent. of filler; calendering medium; the bulk of the stock is of a different color from the fibers which give the mottled effect; but the color of the latter should not blend, nor should it affect in any way the color of the remainder of the paper.

Bicolored Papers

These can be made by various processes:

(1) By a combination of a fourdrinier machine and a cylinder machine, the two sheets being brought together at the couch roll.

(2) By feeding, by means of a special device, fresh stock on the sheet formed on the wire of an ordinary fourdrinier.

(3) By joining together two sheets made on two fourdriniers running in opposite directions, which come together under common couch rolls.

(4) By delivering on to the upper couch roll a very fine highly colored stock, containing a high proportion of filler or of ochre.

In certain mills, it is made on a three cylinder machine, each cylinder receiving a different colored stock, in very much the same way as cardboard is made.

The trouble with all these processes is to prepare the different sheets so that all will have the same hardness, strength, sizing, hydration, etc., so that they will all be equally affected by changes in atmospheric conditions. Otherwise the sheets will roll owing to differences in elongation and shrinkage.

Fast colors are generally used, except in certain special cases (e.g., for permits, etc.) where aniline dyes are used purposely so that they may be readily identified. The colors most largely used are: yellow and white, olive and white, chamois and white, blue and white, red and white, green and white, and bister and white.

Blotting Papers

These are made in various qualities, the best being of boiled and bleached cotton rags. The most important property is absorbency. This quality is determined conventionally by dipping the end of strips of the paper in a bath of distilled water at room temperature, and observing the height to which the water rises in a given time (usually 10 minutes). A blotting

paper is not considered to be of good quality unless the height of absorption is at least 100 mm., and for the best qualities it should be at least 150 mm. in ten minutes.

* * *

But the properties of a paper, as enumerated above, should not be confused with the method of manufacturing the paper. We have outlined their physical characteristics; but in order to reproduce them satisfactorily and consistently one requires to have a thorough practical knowledge of paper making or else very minutely detailed instructions. A paper mill superintendent who is thoroughly familiar with paper pulps can, either with or without the help of microscopical analysis, ascertain quite accurately the nature of the stock used in the manufacture of a given grade of paper.

He must then determine the proportion of strong stock, which forms the framework, so to speak, of the sheet and gives it strength. In the case of all rag papers, it constitutes about 50 per cent. of the fiber furnish and may consist of linen, flax tow, thread waste, cordage, and sometimes new cotton trimmings. The remainder consists of second grade stocks which act as fillers and are chosen to impart either transparency or opacity, little or much bulk, more or less whiteness, hardness or softness, or inertia suppleness, as the case may be. They are made up of softer linen or cotton rags, or of waste paper or broke of the same nature as the paper being made. Generally speaking, in all rag papers these two grades of stock are present in equal proportions.

With papers composed of both rags and chemical pulps, two cases must be considered:

(1) To a large proportion of rags is added a small amount of chemical pulp;

(2) A small amount of rag stock is added to a large amount of chemical pulp.

More frequently one has to deal with a mixture of various chemical pulps, in which case the strong stock constitutes from 40 to 70 per cent. of the fibers, while the filling stock constitutes from 60 to 30 per cent; the former are bleached or unbleached sulphite and soda, and the latter are poplar (both sulphite and soda), birch, bamboo, reed, esparto, bleached straw, and trimmings and broke of paper of the same grade and quality as is being made. The latter group can again be divided into two distinct classes: those which are hard, transparent, and have rattle, and those which are soft, flexible and opaque. It is therefore necessary to make a judicious choice according to the properties required and also according to their cost.

It can be laid down as a general principle that the price paid for any given grade of paper should be sufficiently high to allow the paper maker to use the stock or stocks best suited to give the required properties when judiciously blended. It may sometimes happen that the manufacturer makes an error in calculating his cost of production; and in such a case, if he is unwilling to stand a loss, he must necessarily use an entirely different stock from what he should logically have used. The quality of the paper cannot but be adversely affected, and is frequently the cause of much trouble and annoyance.

In order to avoid these unfortunate happenings, it is necessary to be able to analyze paper, so as to determine the properties and proportions of the raw materials of which it is composed. The cost of production can then be determined with a reasonable degree of accuracy.

In the case of mineral fillers, as with the fibrous materials, the paper maker has a certain number of raw materials from which to choose; and he must know their properties, nature, specific gravity, yield, cost (in the finished paper), and also how to work them so that they will impart the desired properties to the finished paper.

Various factors in connection with sizing also affect the paper. The quality of the size milk should not be the same with all kinds and grades of paper, nor the amount of size in the milk. Various difficulties are encountered, due to the composition of the water, or of the stock, or to the method of sizing, and these must be overcome. In this connection it may not be amiss to recall that it has been proved by numerous experiments that the method of sizing affects the results as much as the quality of the size. It can safely be stated that using a rosin size containing 30 per cent of free rosin, in the form of milk with 28 to 30 grams of rosin per liter, and following proper technique, a paper should be evenly sized with 3 per cent of rosin and 4 to 6 per cent. of sulphate of alumina.

But neither the art of determining the composition of paper, nor of sizing it properly can be acquired overnight; and it requires several years of practical experience to obtain consistently good results. And even with this experience errors are quite liable to occur. These can be mended by means of tricks of the trade.

When starting up an order on the paper machine it may be noticed that something is wrong, that there has been a bungle somewhere, and something must be done immediately to prevent the loss of the material which is in process of manufacture. This may not always be an easy matter. In some cases, when the difference between the results obtained and what is required is too great, it may be best to use what is in process of manufacture for some other order.

Let us suppose that the sheet is too soft and lacks strength, that the color of the stock is not sufficiently white to obtain the color required, that too much filler was used, or that the stock is too hard and transparent.

The first thing to do is to determine what furnish should have been used. Then, after estimating approximately how much stock is left in the machine chest, calculate the furnish of the next beater so that when it is sent to the machine chest the mixture will have the required composition. In case the color is not satisfactory, the correction must take into account not only the amount but also the nature of the coloring to be added.

The superintendent should always try to reproduce as faithfully as possible the quality and grade of the sample submitted; and as his staff is frequently more or less inexperienced he must be able not only to detect errors but also to correct them. A careful study of the paper to be reproduced is therefore of the utmost importance. After ascertaining the nature and amount of filler retained, the whiteness of the stock, the degree of finish and calendering, the degree of sizing, the opacity, bulk, formation, coloring, grain, absorbency, stiffness, rattle, folding and tearing resistances, in a word, all its physical properties, the qualitative and quantitative fibrous composition is determined microscopically. He then calculates the cost of production, after which he is in a position to judge if he can make the paper at a profit at the stipulated

price or if he must substitute cheaper materials which will give the same or nearly the same results.

There is one rule which should always be followed when starting up on a new order; try to have the color of the stock a little whiter than is required, add rather less filler in the first beaterfuls, and color the stock a shade lighter, so that if a correction is required it may be through the addition of color, filler, etc. If, on the contrary, too much of these have been added, it is always more difficult to effect the required correction.

INSTITUTE ITEMS

OUR JAPANESE STUDENTS

The far reaching appreciation of the value of the correspondence courses in Pulp and Paper Making conducted by the Institute of Industrial and Domestic Arts is indicated by the fact that more than 280 students have enrolled. Many nationalities are included.

Among the students enrolled by Mr. Edmond Piché in British Columbia is Mr. Naoyuki Oseki who holds an important position with the Pacific Mills, Limited at Ocean Falls. Besides Mr. Oseki, the Institute has two other Japanese students, who have the honor of being the first to enroll outside of Canada and the United States. Both of these gentlemen are employed by the Oji Paper Manufacturing Co., the largest concern of the kind in Asia. Mr. Bunjo Shimura is Assistant Chemist and Mr. Takeo Ota is Mill Engineer; they are university graduates.

Considerable interest is also being shown in England, and in the United States there are already 25 students of the Institute courses.

TROUBLE WITH WIRE SEAM

Editor,

Questions & Answers,

PULP & PAPER MAGAZINE.

Dear Sir:

I am writing you to ask for any information you may be able to give with regard to the trouble I am having on account of the wire filling up just back of the seam. This causes a line of crushed paper just back of the seam, and is worst on thin papers. I have tried running the wire with varying degrees of suction, but this does not seem to have the desired effect in correcting the trouble.

Hoping that I may get some suggestions through your Question and Answer column, I remain

Your truly,

A. Backtender.

Note.—The Editor will be glad to receive and pay for answers to questions.

The happiness of your life depends upon the quality of your thoughts.—Marcus Aurelius.

THE END OF THE DRIFTER

By J. J. Harpell.

President, of the Institute of Industrial and Domestic Arts

The strongest tendency that the average worker has to fight against is the disposition or belief that there is some other job at which he could make more money or find greater pleasure in doing than the one he has; and this tends to make him dissatisfied with his job. He concludes that he should not study it, because he intends to leave it as soon as he can get what he thinks is a better one. He leaves it or (what is more likely) he loses it. At close range, the new work does not possess the attractions it seemed to have at a distance, and in a short time he has the same disregard for his new job that he had for the old one. And so he goes on from one job to another. "Too many people are like the man who travelled the world over seeking a four-leafed clover, only to find it, too late, in his own garden. They see opportunity everywhere but where they are; and lo! there and there only it is to be found by them."*

Years go by, and in a short time he finds himself in the class of unskilled floaters, uninterested in his work, unhappy in his home, and always a lap or more beyond his income. As in the case of his work, his home life lacks order and foresight. As age creeps up, his physical powers wane, and his earning power, unsupported by a trained mind, declines. Hampered by poverty and debt, he and his family are forced to live in squalid surroundings with poor furniture, mean clothes, and no pleasures worthy of the name. He and his family live in constant dread of anything that will stop the meagre income, even for a day. There is no chance now to lay by for old age or sickness.

Is there anything more to be dreaded than the consequences of an ill-regulated or non-regulated life? Yet how many young men and women ever stop to give this matter a thought! Without purpose or determination to accomplish something definite, they drift along. By a few hours of indifferent work each day, they earn their daily bread; and the remainder of their waking hours is spent in idleness or in the pursuit of pleasure.

There is just as much pleasure, and a great deal more happiness, to be had from a life of earnest work and study as from a life of idleness and indifference. To make the change requires only a resolution and a concentrated effort for a few months, until the habit is formed. Moreover, the start may be made at any time, and while at any kind of work. If one wishes to become a well-balanced thinker, the brain must be trained, just as the muscles must be trained if one desires to excel in athletics. Brain power or brain "muscle" is made by study.

*T. J. Foster in his advice on how to succeed.

THE PROGRESS OF INDUSTRIAL RESEARCH IN CANADA

What Canada has accomplished in the way of scientific and industrial research is thoroughly covered in a 168-page book, just issued by the Canadian Manufacturers Association. The book contains the addresses delivered at the National Research Conference held under the auspices of the Association at Ottawa on February 20-22 and includes statements by the representatives of government departments, universities, colleges, industries and others engaged in research work. As a record and summary of the progress of scientific and industrial research in Canada, the publication will be found of considerable value.

A NEW ALL-ELECTRIC PAPER MILL

By A. H. WHITE * and R. H. ROGERS †

(Continued from last issue)

The General Electric sectionalized drive is operated in the following manner. In the basement below each paper machine there is installed a 500-kw. direct-current-geared turbine-generator shaft. The line voltage determines the rate of production on the paper machines and is 185 volts for 800 ft. per minute, with a workable range from 500 ft. to 1,200 ft. per minute. This voltage is controlled from the machine room by a chain-operated rheostat in the 500-kw. generator field. The turbine speed and the exciter voltage are held constant.

The motors driving the various sections have their fields energized by the 125-volt exciter. They are large, low-speed units designed for about 150 r.p.m. at 245 volts so as to avoid the interposition of gears. The couch roll and calender stack each take a 100-hp. motor, while the presses each take a 50-hp. motor, the dryer two 100-hp. motors and the reel a 30-hp. and the rewinder a 35-hp. motor, all of the shunt-wound interpole type.

With the exception of the rewinder motor and the second motor on the dryer, each motor is accompanied by a 20-hp. synchronous motor — or generator, as the case for the moment may be — and these synchronous tie-in units are all connected to a common three-wire, three-phase bus to which nothing else is connected. Their fields are energized from the 125-volt exciter. These synchronous units are belted through cone pulleys to the direct-current motors, with the exception of the first dryer motor. In that case the cone pulleys are dispensed with as the speed of this unit is taken as par and the "stretch and draw" of the other sections are regulated to this base speed.

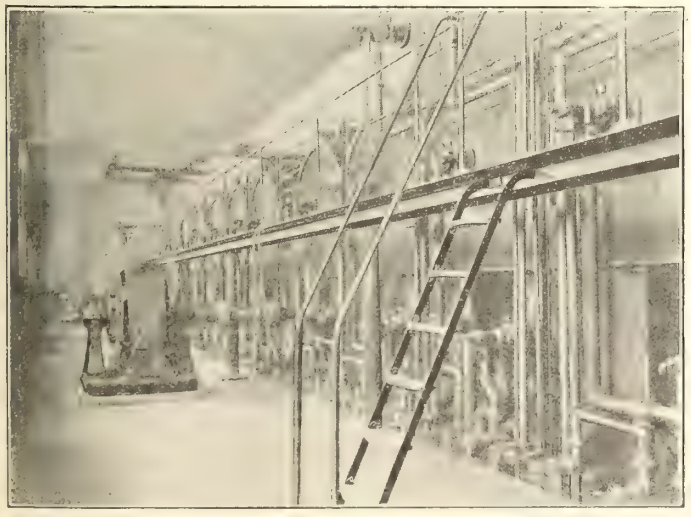
The effect of these synchronous units tied in as they are is similar to that of a great flywheel which can be neither delayed nor hurried. With all the motors running, any direct-current motor and the section it drives may be adjusted as to speed by moving the belt along on the cone pulleys. If the direct-current motor field strength is right, the synchronous unit will be simply idling, as indicated by its ammeter. Should the direct-current motor be inclined to run faster, the synchronous unit becomes a generator giving energy to the other similar units which for the time may be performing as motors. This puts a restraining load on the direct-current motor and effectually holds it in line. Conversely, if a direct-current motor is inclined to slow down, its attached synchronous unit would supply aid as a motor again, effectually holding the section in line.

These guide units can aid or hold back up to 40 hp. each, and by occasional hand adjustment of the direct-current motor-field rheostats these exchanges of loads can be kept near to zero. Little attention is paid to the loads on these units, however, and the meters bear only a center mark and outside limit marks. Any change in the load on one unit affects the other eight by only one-eighth of the change. The belt shifter is brought through to the front of the machine, and the machine tender can change the speed of a section by a fraction of 1 per cent with the assurance that it will hold that place until he makes a further change.

When it is necessary to slow down or stop an individual section, the ordinary drum controller is resorted to, and its first step disconnects the synchronous unit from the common bus. Thereafter the section is controlled in the ordinary manner. After the section is brought up to normal speed the synchronous unit is tied in by pushing a button at the controller. Should the motor-overload circuit breaker open, it also disconnects the guide unit.

After a complete shutdown, as, for instance, to put in a new Fourdrinier wire, all the sections can be restarted, brought up to speed and tied in as fast as the controllers can be handled. The tying in by the synchronous units does not require any special manipulation, as, being belted to their respective sections,

*Chief engineer, International Paper Company.
†Power and Mining Department, General Electric Company.



Dryer Section of Paper Machine Showing 100-H.P. D. C. Driving Motor



Twenty Sand Filter Beds Have a Capacity of 20,000,000 Gal. Per Day

they are always so closely in accord that there need be no delay on their account.

As previously mentioned, the wrapper machine takes the rejected material from the ground-wood screen room and sulphite screen room and converts it into heavy wrapping paper, making about 10 tons in eight hours. The stock passes through beaters and Jordans and then to the wrapper-machine room. The wrapper machine is of the cylinder type and is driven by two motors, one on the constant-speed line shaft carrying auxiliaries and one on the variable-speed shaft driving the paper machine itself. These are both direct-current motors operated by a turbo-generator set which carries 30 lb. back pressure in order that the steam may have sufficient heat to dry this very thick paper.

The shop machinery is driven both in groups through line shafting and with individual motors connected to

TABLE VI—ELECTRIC MOTOR DRIVES IN SULPHITE SCREEN ROOM

(Total connected load, 1,440 h.p.; 550 volts alternating current.)

One 10-in., 1,800-g.p.m., 135-ft.-head, white water to pits:	
One 100-h.p., 1,800-r.p.m., squirrel-cage.	G. E. *
One agitaor blow-pit soft-stock tank:	
One 25-h.p., 690-r.p.m., squirrel-cage.	C. W. †
One knotter screen:	
One 5-h.p., 860-r.p.m., squirrel-cage.	C. W.
Three first screens and one second screen (rotaries):	
One 150-h.p., 790-r.p.m., squirrel-cage.	G. E.
One 5-in. 500-g.p.m., 160-ft.-head pump, white water shower to screens:	
One 40-h.p., 1,800-r.p.m., squirrel-cage.	G. E.
One 10-in., 2,500-g.p.m., 45-ft.-head pump, white water to screens:	
One 42-h.p., 1,200-r.p.m., squirrel-cage.	G. E.
One 10-in., 3,865-g.p.m., 20-ft.-head pump, stock screens to washers:	
One 40-h.p., 720-r.p.m., squirrel-cage.	G. E.
One 3-in., 300-g.p.m., 200-ft.-head, pump, showers to washers:	
One 24-h.p., 1,800-r.p.m., squirrel-cage.	G. E.
Four sulphite stock washers, four dums each:	
One 25-h.p., 860-r.p.m., squirrel-cage.	C. W.
Two agitator, screen-room soft-stock chests:	
Two 25-h.p., 690-r.p.m., squirrel-cage.	C. W.
One 1,360-g.p.m., 25-ft.-head pump, white water to "save-alls":	
One 15-h.p., 1,200-r.p.m., squirrel-cage.	G. E.
One 600-g.p.m., 28-ft.-head pump, "save-all" stock to tank:	
One 10-h.p., 900-r.p.m., squirrel-cage.	G. E.
One agitator, sulphite soft-stock tank:	
One 10-h.p., 720-r.p.m., squirrel-cage.	G. E.
One 620-g.p.m., 41-ft.-head pump, sulphite stock to mixer:	
One 20-h.p., 1,200-r.p.m., squirrel-cage.	G. E.
Two stock consistency regulators:	
Two 0.1-h.p., 1,750-r.p.m., squirrel-cage.	R. & M. ‡
Color pumps:	
One 5-h.p., 690-r.p.m., squirrel-cage.	C. W.
Mixer for G. W. stock, sulphite stock, alum and color:	
One 0.5-h.p., 1,750-r.p.m., squirrel-cage.	R. & M.
Beater for sulphite laps:	
One 50-h.p., 690-r.p.m., wound rotor.	C. W.
Wet machine No. 1:	
One 50-h.p., 690-r.p.m., wound rotor.	C. W.
Wet machine No. 2:	
One 50-h.p., 860-r.p.m., wound rotor.	C. W.
One 2½-in., 250-g.p.m., 50-ft.-head pump, showers to wet machines:	
One 7.5-h.p., 1,800-r.p.m., squirrel-cage.	G. E.
Four Jordans:	
Four 150-h.p., 327-r.p.m., squirrel-cage.	G. E.
Screen room fan:	
One 5-h.p., 1,730-r.p.m., squirrel-cage.	C. W.

*General Electric. †Canadian Westinghouse. ‡Robbins & Myers.

TABLE VII—ELECTRIC MOTOR DRIVES IN GROUND WOOD MILL

(Total connected load, 15,100 h.p.; 2,300 volts alternating current.)

One conveyor cross-connecting long conveyors over charging floor:	
One 10-h.p., 690-r.p.m., squirrel-cage.	C. W. *
Two conveyors, 220 ft. long over charging floor:	
Two 25-h.p., 900-r.p.m., squirrel-cage.	G. E. †
Cut-off saw charging floor:	
One 5-h.p., 1,800-r.p.m., squirrel-cage.	Cr. Wh. ‡
Ventilating fan charging floor:	
One 7.5-h.p., 720-r.p.m., squirrel-cage.	C. W.
Air compressor:	
One 2-h.p., 1,800-r.p.m., squirrel-cage.	G. E.
Two heater fans, grinding room, 15,000 cu.ft. per minute:	
Two 5-h.p., 1,800-r.p.m., squirrel-cage.	C. W.
Heater-fan grinder building:	
One 15-h.p., 900-r.p.m., squirrel-cage.	G. E.
Heater-fan screen room:	
15-h.p., 690-r.p.m., squirrel-cage.	C. W.
Ventilating fan, grinder floor:	
One 5-h.p., 860-r.p.m., squirrel-cage.	C. W.
Two motor-generator exciter sets for grinder motors:	
Two 350-h.p., 1,200-r.p.m., 2,200-volt.	G. E.
Two 225-kw., 1,200-r.p.m., 125-volt direct-current generators.	G. E.
Two oil pumps for grinder load regulators:	
Two 2.5-h.p., 1,200-r.p.m., 110-volt, direct-current.	G. E.
Grindstone trimmer:	
One 10-h.p., 900-r.p.m., wound rotor.	G. E.
Two 3-in., 266-g.p.m., 404-ft.-head, four-tage pumps, high pressure:	
Two 50-h.p., 1,800-r.p.m., squirrel-cage.	G. E.
Two 480-g.p.m., 201-ft.-head pumps, low-pressure grinder, jack water:	
Two 50-h.p., 1,800-r.p.m., squirrel-cage.	G. E.
Six two-stone magazine grinders:	
2,652-kva., 240-r.p.m., 2,200-volt synchronous.	G. E.

(Total connected load, 14,150 h.p.; 500 volts alternating current.)

Two sliver screens:	
One 15-h.p., 720-r.p.m., squirrel-cage.	G. E.
One 6,300-g.p.m., 41-ft.-head pump, white water to grindstone:	
One 100-h.p., 1,620-r.p.m., squirrel-cage.	G. E.
One 252-g.p.m., 97-ft.-head pump, "save-all," white water to grinder showers:	
One 100-h.p., 1,200-r.p.m., squirrel-cage.	G. E.
Four rotary knotters:	
One 10-h.p., 860-r.p.m., squirrel-cage.	C. W.
Two 14-in., 5,000-g.p.m., 57-ft.-head pumps, stock to knotters:	
Two 100-h.p., 900-r.p.m., squirrel-cage.	G. E.
One 3-in., two-stage, 300-g.p.m., 200-ft.-head pump, filtered water shower and first screen:	
One 25-h.p., 1,180-r.p.m., squirrel-cage.	G. E.
Two second screens:	
One 50-h.p., 750-r.p.m., wound rotor	G. E.
Thirty deckers in groups of five:	
Six 25-h.p., 600-r.p.m., wound rotor.	G. E.
One 2,400-g.p.m., 83-ft.-head pump decker, white water to tank:	
One 75-h.p., 1,200-r.p.m., squirrel-cage.	G. E.
Two white-water pumps to "save-alls":	
Two 7.5-h.p., 570-r.p.m., squirrel-cage.	C. W.
One 6-in., 98-ft.-head pump, "save-all," stock to decker stock tank:	
One 30-h.p., 1,800-r.p.m., squirrel-cage.	G. E.
One 1,700-r.p.m., 60-ft.-head pump, "save-all," white water to screen showers:	
One 40-h.p., 1,800-r.p.m., squirrel-cage.	G. E.
One 10-in., 25-ft.-head pump, rejections from fine screens:	
One 30-h.p., 900-r.p.m., squirrel-cage.	G. E.
One pump rejections from second screens to wrapping machine system:	
One 100-h.p., 720-r.p.m., squirrel-cage.	G. E.
One vertical 80-g.p.m., 25-ft.-head pump, sump pit to sewer:	
One 5-h.p., 1,300-r.p.m., squirrel-cage.	C. F. |
One 1,350-g.p.m., 96-ft.-head pump, stock to mixing system:	
One 50-h.p., 1,200-r.p.m., squirrel-cage.	G. E.

*Canadian Westinghouse. †General Electric. ‡Crocker-Wheeler. |Canadian Fairbanks.

machines. There are blacksmith, machine, pipe, carpenter and pattern shops and a roll-grinding room fully equipped to handle all routine work of mill maintenance.

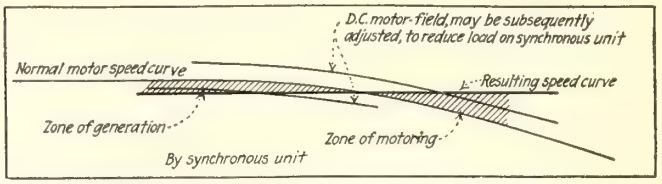
The lighting of this mill is particularly well distributed and was laid out with a view to economy without sacrificing light where light is needed. There are about 1,200 tungsten lamps averaging 100 watts and actually running from 75 watts to 200 watts. They are fed by open conduits, using condulets for outlets, and are all equipped where practicable with 18-in. white enameled reflectors. The lighting load is about 120 kw.

TABLE VIII—ELECTRIC MOTOR DRIVES FOR ONE OF FOUR 164-IN. PAPER MACHINES

(Total connected load, 488 h.p.; 550 volts, alternating current.)

One 2,900-g.p.m., 56-ft.-head pump, stock from chest to mixing box, common to 4 machines:	
One 60-h.p., 1,200-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.*
One 2,000-g.p.m., 28-ft.-head pump, suction white water to mixing box:	
One 25-h.p., 1,200-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
One 4,800-g.p.m., 40-ft.-head pump, stock to machine screens:	
One 75-h.p., 900-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
Four rotary machine screens:	
Four 5-h.p., 600-r.p.m., 550-volt, A.C., squirrel-cage.	C. W.
One 1,000-g.p.m., 70-ft.-head pump, fresh water to showers:	
One 30-h.p., 1,200-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
One Fourdrinier shaker (not used):	
One 1-h.p., 900-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
Two Nash vacuum pumps, Fourdrinier suction boxes and couch suction box:	
Two 100-h.p., 720-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
One turbine-generator set for driving nine sections of paper machine:	
One 500-kw., 900-r.p.m., 330-volt, D.C., generator	G. E.
One 35-kw., 900-r.p.m., 125-volt, D.C., exciter	G. E.
One Fourdrinier section drive at couch roll:	
One 150-h.p., 136-r.p.m., 245-volt, D.C.	G. E.
One 20-h.p., 857-r.p.m., 210-volt, synchronous unit.	G. E.
One Nash vacuum pump, first press suction roll:	
One 100-h.p., 750-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
One first press drive:	
One 100-h.p., 143-r.p.m., 245-volt, D.C.	G. E.
One 20-h.p., 857-r.p.m., 210-volt, synchronous unit.	G. E.
Three second, third and fourth press drives:	
Three 50-h.p., 151.3-r.p.m., 245-volt, D.C.	G. E.
Three 20-h.p., 857-r.p.m., 210-volt, synchronous units.	G. E.
(Total connected load, 630 h.p.; 245 volts, direct current.)	
One dryer (two-motor drive):	
Two 100-h.p., 150.1-r.p.m., 245-volt, D.C.	G. E.
One 20-h.p., 857-r.p.m., 210-volt, synchronous unit.	G. E.
One dryer (starting and slow running) "kicker":	
One 30-h.p., 1,800-r.p.m., 550-volt, A.C., wound rotor.	G. E.
One calender drive:	
One 100-h.p., 147.7-r.p.m., 245-volt, D.C.	G. E.
One 20-h.p., 857-r.p.m., 210-volt, synchronous unit.	G. E.
One fan for broke from calender to broke heater:	
One 15-h.p., 1,150-r.p.m., 550-volt, A.C., squirrel-cage.	C. W.†
One calender-roll hoist gear:	
One 10-h.p., 900-r.p.m., 550-volt, A.C., wound rotor.	G. E.
One reel drive:	
One 30-h.p., 98-5-r.p.m., 245-volt, D.C.	G. E.
One 20-h.p., 857-r.p.m., 210-volt, synchronous unit.	G. E.
One reel hoist:	
One 3-h.p., 1,200-r.p.m., 550-volt, A.C.	N. W.‡
One slitter drive:	
One 3-h.p., 1,200/900-r.p.m., 550-volt, A.C., wound rotor.	G. E.
One fan to blow trimmings from slitter to broke beater:	
One 3-h.p., 1,750-r.p.m., 550-volt, A.C., squirrel-cage.	C. W.
One motor-generator set for rewinder drive:	
One 50-h.p., 1,200-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
One 32-kw., 1,200-r.p.m., 250-volt, D.C.	G. E.
One rewinder drive:	
One 35-h.p., 330-r.p.m., 245-volt, D.C.	G. E.
One hoist for rewinder:	
One 3-h.p., 1,200-r.p.m., 550-volt, D.C.	N. W.

In this mill, the only one 100 per cent electrified mill in the paper industry, may be found practical applications of electric power in many forms. The pumping of water and stock forms a large percentage of the load, and the combined output of the pumps is about 140,000 gal. per minute. A reference to the diagram showing the water content in the materials as they pass through the various operations will indicate how important these units are. The grinding of wood on such a wholesale plan by electric motors, while not new, is so well worked out here that it is worthy of



Range of Motor Performance in the Sectionalized Paper Machine Drive

TABLE IX—ELECTRIC MOTOR DRIVES COMMON TO THE FOUR PAPER MACHINES

(Total connected load, 633 h.p., 550 volts, alternating current.)

Two broke beaters:	
Two 50-h.p., 720-r.p.m., 550-volt, A.C., wound motor.	G. E.*
Two agitators in broke-stock chests:	
Two 5-h.p., 690-r.p.m., 550-volt, A.C., squirrel-cage.	C. W.†
Two 6-in., 800-g.p.m., 57-ft.-head pumps, broke stock to machine chests:	
Two 25-h.p., 1,200-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
Two air compressors:	
Two 100-h.p., 690-r.p.m., 550-volt, A.C., squirrel-cage.	C. W.
Four machine-room heater fans:	
Four 25-h.p., 900-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
Four machine-room heater fans:	
Four 15-h.p., 1,200-r.p.m., 550-volt., A.C., squirrel-cage.	G. E.
Four finishing-room heater fans:	
Four 3-h.p., 1,120-r.p.m., 550-volt, A.C., squirrel-cage.	C. W.
One pump, hot-water return from heating system:	
One 15-h.p., 1,200-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
Two wet broke-truck battery chargers:	
Two 3.5-h.p., 1,150-r.p.m., 550-volt, A.C.	E. P.‡
One finishing-room rewinder:	
One 25-h.p., 860-r.p.m., 550-volt, A.C., wound rotor.	C. W.
Two elevators between finishing and shipping departments:	
Two 27-h.p., 600-r.p.m.	O. F.|

*General Electric. †Canadian Westinghouse. ‡Electric Products. |Otis Fensom.

TABLE X—ELECTRIC MOTOR DRIVES IN WRAPPER-MACHINE DEPARTMENT

(Total connected load, 335 h.p.; 550 volts, alternating current.)
(Total connected load, 105 h.p., 240-volts, direct current.)

Two 6-in., 700-r.p.m., 25-ft.-head pumps, wrapper-stock beater:	
Two 10-h.p., 900-r.p.m., squirrel-cage.	G. E.*
One stock beater:	
One 50-h.p., 750-.p.m., wound rotor.	G. E.
Two Claflin refiners:	
Two 75-h.p., 430-r.p.m., squirrel-cage.	C. W.†
One Jordan:	
One 100-h.p., 400-r.p.m., squirrel-cage.	G. E.
Agitator in stock chest:	
One 15-h.p., 690-r.p.m., squirrel-cage.	C. W.
One turbine-generator set:	
100-kw., 1,200-r.p.m., 240-volt, D.C.	G. E.
Constant-speed line-shaft drive:	
One 30-h.p., 775-r.p.m., 230-volt, D.C.	G. E.
Variable-speed line-shaft drive:	
36/75-h.p., 400/1,000-r.p.m., 240-volt, D.C.	G. E.
Vacuum pump:	
7.5-h.p., 1,800-r.p.m., squirrel-cage.	G. E.
Exhaust fan:	
One 15-h.p., 690-r.p.m., squirrel-cage.	C. W.

*General Electric. †Canadian Westinghouse.

TABLE XI ELECTRIC MOTOR DRIVES IN SHOPS

(Total connected load, 174 h.p.; 550-volts, alternating current.)

One line shaft and blacksmith blowers:	
One 10-h.p., 900-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.*
One line shaft, machine shop:	
One 15-h.p., 900-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
One pipe threader:	
One 5-h.p., 1,200-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
One ventilating-fan machine shop:	
One 10-h.p., 900-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
One welding set:	
One 7.5-h.p., 1,800-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
One planer:	
One 10-h.p., 900-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
One shaper:	
One 5-h.p., 1,200-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
One keyseater:	
One 5-h.p., 900-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
One drill press:	
One 5-h.p., 900-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
One roll grinder:	
One 10-h.p., 900-r.p.m., 550-volt, A.C., squirel-cage.	G. E.
Two 5-h p., 1,200-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
One pipe cutter:	
One 10-h.p., 860-r.p.m., 550-volt, A.C., squirrel-cage.	G. E.
Two line shafts, pattern shop and carpenter shop:	
Two 30-h.p., 860-r.p.m., 550-volt, A.C., squirrel-cage.	C. W.†
Two heater fans, pipe and machine shops:	
Two 5-h.p., 1,720-r.p.m., 550-volt, A.C., squirrel-cage.	C. W.
One elevator, machine shop:	
One 25-h.p., 900-r.p.m., 550-volt, A.C.	A. B. S.‡
One concrete mixer:	
One 15-h.p., 1,140-r.p.m., 550-volt, A.C.	Wag.|
One air compressor, portable:	
One 1-h.p., 725-r.p.m., 550-volts, A.C.	Wag.

*General Electric. †Canadian Westinghouse. ‡A. B. See. |Wagner.

considerable study. Only in very recent years has it been considered feasible to grind wood other than by direct application of water power. The hundreds of wide scattered auxiliary units of every conceivable type could certainly not be located so conveniently or operated so economically with any other from of power transmission than electric motor drive. Finally, the sectional motor drive of the paper machines themselves is a very fine development of special industrial engineering and works out very much to the satisfaction of the trade.

PAPER MAKING IN JAPAN

The Japanese Legation in Tokio reports that the market in Japan has been extremely active. Much foreign paper is to be imported under contract. For the Japanese mills 1921 was a far better year than 1920. The big firms, however, complain that foreign competition is severe, partly because of the high costs of production, partly because of the low rate of exchange in some European countries. Prices of the best quality of print paper rose to 29½ sen per pound in January 1921, falling to 23 sen in April-June, 22 in June, 20 in September, and 21 in November. The stock of paper on hand in November amounted to 160,000 bales against 200,000 at the end of 1920. Japan's consumption of paper reached 129 million pounds in 1905, 251 million in 1912, and 560 million in 1921; in 1920 the yearly average was about 12 pounds a head, which is little compared with American's 120 pounds and England's 60 pounds. In the future Japan's consumption of paper will rise. —Papir-Journalen May 13, 1922.

The man God uses does not spend much time in looking for an easy place.

To bring up a child in the way he should go, travel that way yourself.

WILL CANADA REMAIN LAST IN THE RACE?

Col. F. M. Gaudet, formerly Technical Executive Officer of the Advisory Research Council, and himself well experienced in practical benefits of industrial research, concludes his remarks thus: "What are we doing in Canada today? What are we doing to help our industries and manufacturers? We are doing nothing..... Some of our rich corporations are doing little, but what we want is the establishment of a research institute that will be a guide in all these matters. We want to focus our efforts and our energies in such a way that we shall get the best results."

Mr. Hume Cronyn, formerly chairman of the parliamentary committee on research, outlined the past and present effort in respect of research by the leading industrial nations of the world. Britain has made wonderful strides since she awoke to the peril of her position in 1915. The United States is far in the lead. Canada is woefully behind. Mr. Cronyn concludes by saying: "Are these other nations, who are making large expenditures on scientific research, chasing a will-o'-the-wisp? Can this idea be a mere fad or dream? As Dr. Ruttan has pointed out, we are the only British Dominion that has not actively taken steps towards the establishment of a national research institute. Are all the others out of step? Is Canada alone marching forward?"

"The British Research Council with the great fund its disposal (£2,000,000) has approached the various industries of Great Britain and has induced some twenty-three of them to organize themselves, and they have established a separate laboratory for the study and solution of their respective industrial problems and for the improvement and cheapening of their manufacturing processes. Each industry has subscribed a large sum of money and the Research Council has added to this an equal sum, and the special research laboratory for each industry has thus been started.

"In Canada conditions are quite different. The industries are fewer and not so wealthy and the Canadian Government is not in a position to subscribe $10,000,000 in aid of research.

ABITIBI CELEBRATED RECORD

Eleven hundred employees of the Abitibi Power and Paper Company, Limited, were entertained at a banquet at Iroquois Falls on May 5, officials of the company being the hosts. The banquet was in celebration of the record production of over five hundred tons of newsprint in a single day, a feat which the company acknowledged could not have been accomplished without the loyal co-operation of the employees. The banquet was a distinct success and illustrated the good feeling existing between the company and its workers.

EQUIPMENT FOR PAPER MILLS

There are thirteen new paper-making machines being installed in Canadian paper mills this year. When erected and running full they will consume more than 350,000 additional cords of wood a year. Canada is already consuming and exporting more than 5,000,000 cords of pulpwood, representing the growth of a century or more, from 1,250,000 acres of land.

THE WOODLANDS SECTION

PARLIAMENT KNOWS FOREST SITUATION

The last issue of the Pulp and Paper Magazine had just gone to press when the following communication was received from Mr. F. J. D. Barnjum.

"If the Government is sincere in its announced desire to investigate the question of stopping the exportation of unmanufactured wood from Canada, it can find plenty of convincing evidence to warrant such a policy at very little expenditure of time and money." This is the considered statement of Mr. Barnjum, whose efforts on behalf of forest conservation have had the effect of forcing the issue upon the Government's attention, but who is by no means satisfied with Hon. Mr. Fielding's statement in his budget speech that the Government will appoint a commission to look into the question and report to the next session of Parliament.

"The fact is," said Mr. Barnjum, "that the Government's action is not sincere and is not based upon a desire to arrive at an honest solution of the problem. On the contrary, it is simply a means of shelving the matter and of shirking a duty which the Government owes to the country without seeming to do so.

"The reason I say the action lacks sincerity is that I have had the personal assurance of most of the ministers of the Government, including that of the Prime Minister and of the Minister of Finance, that they have already looked into the matter and have become fully convinced of the seriousness of the forest depletion now going on in Canada and of the disaster it threatens to the physical and economic welfare of the country.

"A year ago I made an offer to the Minister of Finance to bear the entire expense of a committee of his own appointing to examine into the forest situation, and promised that if their findings were not more alarming than anything I had described I would cease to agitate for forest conservation. He declined my offer, because, he said, to accept would be to cast doubts on my statements, to which I replied that if he accepted my statements as true and yet failed to act upon them he was derelict in his duty to his country.

"Every member in the House of Commons is acquainted with the full story of our critical forest situation. The figures and facts furnished to them during the past year and a half have never been challenged.

"With regard to Mr. Fielding's concern for the interests of the owners of the fee-land, no one knows better than the Minister that this is mere subterfuge, and that the influx of new mills to this country, if exportation of raw wood was stopped, would at once create a home demand for every cord of wood that is now being sold by the farmer for export.

"If the ministers had the slightest doubt either as to the necessity or the propriety of stopping exportation of unmanufactured wood, such doubts could have been easily dissolved by a reference of the point at issue to their own experts or legal advisers, but I am convinced that no such doubts were or are seriously entertained by them. They realize, quite as well as anybody, the absolute necessity of taking all possible steps immediately to counteract these losses and to conserve the remaining forests for Canada's exclusive use, and for them to talk about dealing with the situation at this time through the agency of a 'royal commission' is about on a par with a fire department chief submitting to a committee of the town council the question of whether the firemen shall be allowed to respond to a general alarm while the whole town is ablaze and threatened with destruction.

"Every one in Canada knows just what to expect from an investigation by a royal commission. We have seen many of them before. First, it involves a needless waste of public funds; second, it opens the way to unnecessary, ineffective and discursive controversies, which result in nothing at all, and, third, its reports are without value and are destined for the waste basket even before they are made.

Provincial Precedents.

"It will be recalled that when the province of Quebec, under the leadership of Sir Lomer Gouin, decided that the time had arrived to stop the exportation of unmanufactured wood from the Crown lands in this province, there was no paltering with a commission or any such nonsense. An order-in-council was put through and the thing was done. That was the process followed, also, in Ontario. The Governments of both these provinces came to the conclusion that the public interest demanded that the foreign exploition of their natural resources should cease and they acted accordingly. The result has been, as everyone knows, of immeasurable benefit to the provinces themselves and to the Dominion at large.

"The present situation is that for many years past, 50 per cent. of the pulpwood cut in Canada has been exported to the United States, bringing in but an inconsiderable return to this country. Our forests are being rapidly exhausted. What with the losses sustained through fires, insects and other destructive agencies, we are within measureable distance of the commercial exhaustion of our supply. The devastation that is going on has a deleterious effect upon our climatic conditions and will eventually affect a large part of our developed and undeveloped hydro-power.

"It is but a few days ago that one of Mr. Fielding's colleagues, the Minister of Justice, gave to the press of the country a statement in which he declared; 'Forest scarcity has bred high prices and keen demand, so that every square mile of timber in this Dominion may be said to represent potential employment, municipal development, traffic for our railways, home markets for our farmers, and other valuable commer-

cial gains. It is useless to argue that forests are private property, for eighty five per cent. of the forest area of Canada is owned by the people. Even were forests protection nothing more than insurance on the existence of paper and lumber companies and the newspaper industry, the claim on a Canadian citizen's co-operation would be hardly less sensible. The plain fact of the matter is that one of the steadiest pillars of the public revenue, railway traffic, well-paid employment, and the upkeep of hundreds of municipalities, is standing timber. That pillar may continue to make a great statistical showing right to the edge of national disaster, for the manufacture of forest products can proceed at high speed until the moment that the storehouse of raw materials reaches the brink of bankruptcy".

"In the face of these conditions and having all the facts before them, the Dominion Government deliberately trifles with the situation and tries to humbug the people with the announcement that a commission will be appointed to 'investigate'. There can be only one conclusion, and that is that the Government is recreant to its trust and indifferent to the public welfare.

"To my mind, this is a bigger issue than any other now before the country, and it will become still greater as the days go by. There is still time for the Government, at this session of Parliament, to disregard its feeble attempt to deal with the situation and put on the statute books a law that will protect Canada's forests from the ruthless exploitation to which they are now being subjected and to conserve one of our greatest national assets for the country's own benefit. If it fails to do so, I, for one, shall conclude that it and the party behind it are no longer worthy of support, and I fully believe that the great mass of the voters of Canada will take the same view. I have no hesitation in predicting that the flagrant disregard of Canada's interests, as displayed in their dealings with this question, if persisted in, will bring about the ignominious defeat of Mr. King's Government and of the Liberal party at no very distant day."

FOREST FIRES DEPLORED BY THE FARMERS

Several important resolutions, including one deploring the great waste by forest fires, were passed by the Fort William District Municipal League in annual session in the City Hall Auditorium.

Respecting forest fire losses R. Falshaw, of Kaministiquia, opened a discussion which ensued for over an hour, practically every delegate attending having something to say in the matter, all remarks bearing the tone that something must be done to prevent serious fires. A resolution embodying such suggestions as a system of public investigation to determine the cause of forest fires and to fix responsibility; that an enquiry be made in all four districts in this part of Ontario as to the expediency of lengthening the open season against setting out brush and clearing fires to May 15 and that fire ranging service be put in operation early enough to exercise control over the putting out of grass fires which are capable of causing serious damage and that men for this service be selected who will not be partial to individuals or corporations, was passed.

DISASTER AWAITS IF FORESTS GO SIR LOMER SAYS

(Specially written by Hon. Sir Lomer Gouin for the Canadian Forestry Association)

One of the greatest menaces facing Canada today is the progressive destruction of the forest resources. The most expert information shows that ten trees have been wasted by human-set fires to one tree utilized for the service of the Canadian people. This spoliation of what is, in the main, a public-owned property, of great immediate utility and quite indispensable to the future of our country, cannot be permitted to proceed much longer. If we are willing to recognize the damaging consequences of forest waste, surely we are willing, as co-partners in Canada's progress, to put a stop right now to a form of public robbery that must be checked if the nation is to survive.

The forest is the most destructible of all our natural resources. Had it not been for recurrent conflagrations started by human carelessness Canada today would undoubtedly have been the richest forest owner on the globe. Forest scarcity has bred high prices and keen demand, so that every square mile of timber in this Dominion may be said to represent potential employment, municipal development, traffic for our railways, home markets for our farmers, and other valuable commercial gains. It is useless to argue that forests are private property, for eighty five per cent of the forest area of Canada is owned by the people. Even were forest protection nothing more than insurance on the existence of paper and lumber companies and the newspaper industry, the claim on a Canadian citizen's co-operation would be hardly less sensible.

The plain fact of the matter is that one of the steadiest pillars of public revenue, railway traffic, well-paid employment, and the upkeep of hundreds of municipalities is standing timber. That pillar may continue to make a great statistical showing right to the edge of national disaster for the manufacture of forest products can proceed at high speed until the moment that the storehouse of raw materials reaches the brink of bankruptcy. If we are to avoid such disaster we must join hands as citizens today and stop the plague of camper's fires, smoker's fires, prospector's fires, and the multitude of other vicious agencies that we Canadians with our own hands are setting loose each summer to ruin a great public heritage.

APPROVED OF PERMIT SYSTEM

Fredericton, N. B. May 10. As a result of the wet weather of the past week following the backward spring conditions, the Department of Lands and Mines decided to extend the time limit for slash burning from May 10th., to May 15th.

This action by the Department is similar to the extension which was granted last year and was done to permit those who have not yet succeeded in disposing of their slash a further opportunity to do so before slash burning, except in exceptional circumstances, is forbidden. Operators and loggers will also benefit from this extension in clearing up brush from the past season's operations occurring within three hundred feet of railway lines and in the vicinity of mills and camps.

The new regulation which provides for registration certificates is receiving the endorsation and hearty support of all directly connected with the forest industries. Many letters of approval have been received by the department since the first announcement of the operation of this scheme was made.

"I received a book of certificates and wish to congratulate the Department in such commendable advanced legislation", wrote a citizen who has had some twenty years of fire fighting experience. "The concise statement of regulations on the back of each certificate should do much to eliminate carelessness with camp fires, cigars and cigarettes."

From a County Councillor — "The matter of registration certificates, I believe, is a long step in the right direction, and one I was hardly expecting to see this year, as a great many people look on wilderness lands as their own. However, I am very glad to know that it is in force, and feel that ultimately it cannot help but be of great value in saving our forests."

A no-forest fire record for the month of April has already been established, but fishermen are already preparing for their initial fishing trips this season.

AVERAGE YIELDS FROM VARIOUS WOODS OF GROUNDWOOD PULP

Based on data collected at an ordinary commercial grinder by the Forest Products Laboratory, U. S. Forest Service, Madison, Wisconsin.

Species of wood	Weight of bone-dry wood per cu. ft., in pounds	Yield of bone-dry pulp per 100 cu. ft. of solid rossed wood, in pounds
Birch, white	34.20	2954
Fir, alpine	22.00	2068
Fir, balsam	21.50	1908
Fir, lowland white	21.53	1950
Fir, noble	21.07	1920
Fir, red	22.25	1915
Fir, silver	21.03	1872
Fir, white	21.40	2007
Gum, black	30.36	2612
Hemlock (eastern)	24.60	2030
Hemlock western	24.80	2160
Larch, western	27.76	2100
Pine, jack	24.00	2126
Pine, loblolly	28.21	2454
Pine, lodgepole (Cal.)	23.20	1926
Pine, lodgepole (Mont.)	25.15	2136
Pine, western yellow	24.65	2061
Pine, white	20.25	1885
Poplar	24.16	2168
Spruce, Englemann (Colo.)	21.28	1965
Spruce, Englemann (Mont.)	24.40	2250
Spruce, Sitka	23.60	2040
Spruce, white	26.42	2400
Tamarack	32.00	2620

The sooner you get a child to be a law unto himself, the sooner you will make a man of him.

Pure living, true thinking, right acting and accurate stating, are good foundations for a noble character.

FUEL VALUE OF WOOD WASTE OVER-ESTIMATED

Manufacturers of wooden products are apt to overestimate the fuel value of the lumber wasted in cutting-up operations. The argument is frequently advanced that a supply of waste on hand at all times permits large savings in coal, and that the purchase of ready-cut wood stock would not be economical because it would leave the manufacturer no waste to use as fuel for operating the power or heating plant.

The false logic of such an argument is apparent when consideration is given to the fact that the material which is thus being used for fuel is high-grade lumber which is worth pound for pound from three to ten times as much as coal. The heating value of this material is considerably lower than that of coal. It is estimated, and the figure is high enough to be conservative, that pound for pound the fuel value of the waste from lumber is not more than 62 per cent of that of coal.

A thousand board feet, or approximately 3,800 pounds, of waste from oak lumber will have a fuel value equivalent to that of 2,360 pounds of coal. If coal is worth $6.50 a ton, the fuel value of a thousand board feet of oak would be $7.66. But the oak lumber from which the waste cuttings came probably cost the manufacturer $62.50 per thousand board feet. The cost of the oak waste as fuel, then, is about eight times that of coal, and the handling charge in the furnace room is greater for wood waste than for coal.

The fuel value of waste is not usually great enough to offset the freight charges on it from mill to factory. It would seem a logical practice, then, on this ground alone, for a manufacturer to use dimension stock and try to reduce his cutting-up waste. The unavoidable waste which always occurs in the manufacture of wooden products usually can be utilized to best advantage as fuel.

ST. MAURICE PAPER'S STRONG POSITION

For the year ended on December 31, 1922, the financial report of the St. Maurice Paper Company, Limited, a subsidiary of the Union Bag and Paper Corporation, shows net profits of $445.075, which is equivalent to 5.63 per cent on the outstanding capital stock of the company. This compares with a net profit of $706,729 in the previous year, when however, there was written off inventories a sum of $703,240 in a readjustment to approximate market value.

Operating profits for the year under review are shown at $696,593, after provision for Government taxes, which compares with $1,046,679 in the previous year, and $2,440,250 in 1920, the company's record period. To the net profits of 1922 of $617,946 is added the previous balance of $617,946, making a surplus of $1,063,021. From this is deducted cash dividends paid during the year, amounting to $394,995, being at the rate of 1¼ per cent quarterly leaving a total surplus of $668,026.

The balance sheet section of the statement discloses the company's strong position well maintained, with, in fact, a slight improvement in working capital position showing.

It will do little good to go out as personal workers unless we go forth prepared by prayer.

Technical Section

REVIEW OF RECENT LITERATURE

A — Properties and Testing of Materials

A-1. Determination of cellulose in plant material, according to the method of cross and bevan. Rudolf Sieber. **Zellstoff U. Papier 3,** 27-29 (Feb. 1923). In the procedure for the determination of cellulose according to Cross and Bevan there is uncertainty in recognizing the end-point of the reaction, consequently the cellulose may be attacked. A method is described whereby the reaction is interrupted, yielding an unattacked cellulose. The chlorination apparatus consists of a wide glass ring over the bottom of which is drawn and tied a linen cloth filter. It is of such a size to fit a 6 cm. buchner funnel. A rubber ring is inserted between the funnel and the bottom edge of the glass container to secure good suction. The wood meal, 3 to 4 g., is placed in the above glass apparatus and heated in a beaker containing water to thoroughly moisten the sample; after cooling, the water is sucked off, and a saturated solution of chlorine water added. With the disappearance of the chlorine odor, in 5 to 10 min., the liquid is sucked off to remove the hydro-chloric acid formed and washed once. The treatment is repeated until the residue is nearly free from lignin, as determined by previous test. After washing, the residue is accorded the usual treatment with sodium sulphite solution, first for 30 min., then for 20 min., washed, transferred to a gooch crucible, dried and weighed. In an actual test the total chlorination time was 30 min. and 200 cc. chlorine water were used. The corrected copper number of the isolated cellulose was never above 1.5 and there was no evidence of oxycellulose. This residue can be further investigated, by known methods, for its content in other substances, lignin and pentosans.—J. L. P.

A-1; A-3. Paper Making Materials from India and Nigeria. Bull. Imp. Inst. 20, No. 3, 287-292 (1922). **Talipot palm leaf stalks** from India yield a pulp from which it is possible to prepare a paper of fairly white appearance and good strength. The pulp bleaches with difficulty and requires a relatively large quantity of bleach. It is doubtful whether the manufacture of white paper from the stalks would be remunerative. Trials with **Betel nut husks** from India indicates that they are not a very suitable material for paper making and that they could only be employed in conjunction with longer-fibred materials for the production of low grade brown papers and boards. Their utilization in this manner does not appear promising. Nigerian **elephant grass** is a satisfactory material for paper making, but it would not be remunerative to export it to the United Kingdom. It could, however, be utilized in Nigeria for the production of half-stuff for export.—A. P.-C.

A-3. Production of Paper Stock from the Papyrus Plant. H. Steinhiller. Ger. patent 365,571. **Papierfabr. 21,** 13 (Jan. 7, 1923). The process consists in treating the papyrus plant, prepared by boiling or retting, to a mechanical squeezing action, as by beating or rolling, and a simultaneous washing with water to free it from pith. The remaining fiber bundles are disintegrated in a mechanical way.—J. L. P.

A-3. Digestion of Typha Domingensis. Emil Heuser and Jan Haugerod. **Papierfabr.** 20, 253-262 (March 5, 1922). Translation by C. J. West in **Paper Tr. Jr.** 75, No. 1, 32, 34, 36 (July 6, 1922). See **P. P. M. C.** 20, 500 (June 15, 1922). (**P. T. J.** 74, No. 25, June 22, 1922) —A. P.-C.

Wood as a Raw Material for the Manufacture of Paper Eng. Hoyer. **Papierfabr.** 21, 17-21 (Jan. 14, 1923). General information, especially regarding economy and paper-making qualities, are given for the following woods; spruce **(Picea excelsa),** Scotch fir **(Pinus sylvestris,** fir **(Abies pektinata),** larch **(Larix europaea),** aspen **(Poplus tremula),** birch **(Betula alba),** beech **(Fagus silvatica),** linden, oak, and alder. Weights per cubic meter of certain woods and their ash contents are tabulated. Wood grown in northern countries or at high altitudes are preferable for paper making on account of their superior quality fibers. The average length of summer wood fibers is given as 3, 5-4, 5 mm., width of fiber 0.03-0.06 mm., fiber wall thickness 0.002-0.003 mm.; the corresponding values for spring wood fibers are 2.5-3.5 mm., 0.015-0.03 mm.; the corresponding values for spring wood fibers are 2.5-3.5 mm. 0.015-0.03 mm., and 0.005-0.008 mm.—J. L. P.

A-4. The relative strength of sheet-machine and hand-mold sheets. E. Sutermeister. **Paper ind.** 4, 1661-1662 (March 1923). A comparison of results obtained in testing the strength of bleached and unbleached soda and sulphite, both beaten and unbeaten, when the sheets are prepared in a hand mold and when they are prepared by means of Wilen's sheet machine, from which the author draws the following conclusions: the sheet machine will give sheets of practically constant weight regardless of the time of beating, within reasonable limits; there is no possibility of calculating from the tests on hand mold sheets what those on machine made sheets would be. It is believed that much more reliable results can be obtained with a sheet machine, and it is recommended that wherever possible the use of the hand mold for quantitative work be abandoned.—A. P.-C.

A-14, K-18. Device for Determining the Thickness of Cardboard Automatically. Ignaz Daubner. Ger. patent 362,493. **Wochl. Papierfabr.** 54, 249 (Jan. 27, 1923).—J. L. P.

A-14. Work of the German Bureau for Testing Materials: Paper Testing. W. Herzberg. **Zellstoff U. Papier** 3, 17-20 (Jan. 1923). Several important investigations are reported briefly: disintegration of typed documents in East Africa, identification of wood using sections of the same, proving falsified documents, spontaneous ignition of pulp, age of paper board, printing paper, paper from Adansonia bast fibers, moisture absorption of tissue paper during transport from Germany to South America, testing paper for fastness to light, detection of harmful metallic constituents in paper. — J. L. P.

G.—Treatment of Pulp

C-0. Removal of Resin, Fat, Wax, Etc., from Plant Materials, Especially Wood and Wood Pulps. C. G. Schwalbe. Ger. patent 366,205. **Papierfabr.** 21, 28-29

(Jan. 14, 1923). The process consists in subjecting not only the extraction liquid but also the materials to be extracted to a continuous or intermittent motion, accomplished by rollers or similar devices which also expose fresh surfaces of the material to the solvent.—J. L. P.

D.—Mechanical Pulp Manufacture

D-4. Magazine Grinder. J. J. Warren. Can. patent 225,541, Oct. 31, 1922. The lower end of the magazine is slightly smaller than the upper. The feed chains are provided with spurs to grip the logs and drive them down positively, and means are provided for adjusting the lateral pressure of the chains against the mass of logs. The lower end of the magazine is provided with an adjustable pocket which can be lowered to compensate for the inevitable wear of the stone. The water required for grinding is supplied at the top of the magazine which causes it to be preheated before reaching the hot stone, softens the wood, and prevents the loss of the sensible heat of the vapor rising from the stone. Means are provided for cooling the shaft between the stone and bearings to prevent the latter from becoming overheated and melting.—A. P.-C.

D-4. Controlling the Pressure in Grinder Pockets. W. Thaler. Can. patent 225,447, Oct. 31, 1922. Same as Fr. patent 532,702. See J. M. Voith, **P.P.M.C.** 20, 634, July 27, 1922.—A. P.-C.

D-4. Method of and Apparatus for Feeding Wood to Magazine Grinders. P. Priem. Can. patent 225,053, Oct. 24, 1922. In order to obtain an even pressure of the wood over the whole surface of the stone; i.e., as great in the center as at the sides where the wood is in direct contact with the feeding devices, the lateral pressure of the latter against the mass of wood is suitably increased. This may be obtained (1) By driving the feed chains at different speeds, the upper chains being driven at a faster speed than the lower ones; (2) By reducing the diameter of the hopper adjacent the stone in the area in which the feed devices work, by means of pressure plates working by compressed air or water or by means of springs; (3) By curving the lower portion of the hopper; (4) By equipping the feed chains with wedges which, during their working travel, gradually vary their inclination from a downwardly angled position to a more nearly horizontal one.—A. P.-C.

D-4. Grindstone Dresser. W. P. Aikin. Can. patent 224,964, Oct. 24, 1922. The burr is provided with pyramidal grinding teeth, the apexes of which conform to a cylinder, and with ribs extending radially beyond the teeth to form the leads on the stone.—A. P.-C.

D-4. Grinding Stone for Wood Grinder. Gottlieb Hohmann. Ger. patent 358,568. **Wochbl. Papierfabr.** 54, 171 (Jan. 20, 1923). This invention is concerned with an arrangement for fastening and removing the stones from the shaft.—I. G.

E—Sulphite Process

E-2. Sulphite Waste Liquors. I. I. Chramtsoff. **Bumaznaia Promyshlenost,** 1, No. 1, 39-54 (July and August, 1922). The processes and chemical reactions taking place in the production of chemical wood pulp are discussed. Analyses of the woods and of the resulting products under different conditions of cooking are given. The by-products and their utilization are discussed. The question of disposal of waste waters is dealt with. Numerous data, original and quoted, are presented.—M. C.

E-2. Sulphite Alcohol. Henri du Boistesselin. **Mon. Sci.** (5), 12, 97-105 (May 1922). After a brief historical sketch of the development of the sulphite alcohol industry and discussion of the causes which have prevented its development in France, the author describes the Swedish process (Wallin and Ekstrom, and Landmark) as it is actually being worked, and the American processes (Marchand, MacKee) which are not yet being worked commercially.—A. P.-C.

E-2. Removal of Waste Liquor from Sulphite Pulp Digesters. W. Nicolai and Co., and A. D. J. Kuhn. Ger. patent 830,108. **Papierfabr.** 21, 29 (Jan. 14, 1923). A perforated metal cylinder is inserted at the bottom of the digester with a side relief for the waste liquor.—J. L. P.

E-2. Drying Sulphite Waste Liquor for Making into a Binder. C. Ellis. Can. patent 226,306, Nov. 21, 1922. The liquor (partially neutralized if desired) is evaporated to about 30 deg. Be. and is then further concentrated to a practically dry powder by atomizing in an atmosphere containing a small quantity of oxygen. It is claimed that the resulting pulverulent product is easily soluble in water and is quite stable in the dry form.—A. P.-C.

F.—Alkaline Process and Equipment

F-1. Analytical Methods for the control of chemical operations in soda and sulphate pulp mills. Rudolf Sieber. **Papierfabr.** 21, 89-94 (Feb. 18, 1923). An article consisting mostly of a review of recent improvements in analytical methods and written in anticipation of the report of the German Analysis Commission for Soda and Sulphate Mills. The following subjects are covered: raw materials, cooking liquors, cooking process, pulp, lime sludge, and by-products as turpentine and methyl alcohol.—J. L. P.

F-2. Removal of the Odors from Soda Pulp Mills. C. G. Schwalbe. Ger. patent 366,419. **Papierfabr.** 21, 29 (Jan. 14, 1923). The patent covers the use of charcoal, animal charcoal, lignite, peat and other porous coals for the removal of bad odors in the waste gases from soda pulp mills.—J. L. P. (See Pulp and Paper, p. 205.)

H.—Bleaching

H-5 Digestion of Straw by the Steffen Process. T. E. Blasweiler, **Papierfabr.** 20, 1025-28; 1061-4; 1101-3 (1922). Description of a detailed test on the bleaching of straw by the Steffen process. It is concluded that this process compares favorably with the Oexmann and other processes commonly used for the same purpose. I.G.

K.—Paper Making Processes

K-10 Sizing of Paper. Ger.patent 363,668. **Wochbl. Papierfabr.** 54, 397, (Feb. 10, 1923). Neutral or basic aluminum chloride is used as precipitant.-J.L.-P.

K-21. Production of Stock for Roofing Felt. H. Abraham. Ger. patent 366,130. **Papierfabr.** 21, 31 (Jan. 14, 1923). Sea grass is added to halfstuff and paper stock for the production of stock for roofing felt.—J. L. P.

NOTE: If you have noticed any errors in the report of the Annual Meeting of the Technical Section, please send in corrections at once.

PULP AND PAPER NEWS

The Hinde and Dauch Paper Company, Atlantic and Hanna Avenues, Toronto, has announced an increase in wages to all factory and mill employees of five cents per hour to time workers and five per cent increase in rate to all piece workers. The increase went into effect last week and has affected over 250 employees. The factory is operated as an open shop and the increase is voluntary on the part of the management.

Aubrey O. Hurst, the well-known Toronto stationer and manufacturers' agent, who died last January, left an estate valued at $40,612, according to his will which has just been probated.

The bodies of Captain John McPherson of the Michigan Sault, and Fred Regan and Gus John, of the Canadian Sault, the three passengers who lost their lives when the tug Reliance, belonging to the Spanish River Pulp and Paper Mills, Limited, ran aground and was wrecked off North Lizard Island in Lake Superior on Dec. 13 last, have been recovered at the island by an employe of the company who had been sent to make a search.

The American Sales Book Company, of which S. J. Moore, of Toronto, is president, has declared a dividend of $1, which is in line with the president's announced policy at the annual meeting last March. A dividend has also been declared on preferred at the rate of 1 3-4 per cent, payable August 1 to shareholders of record July 14. Both common and preferred dividends are payable in New York funds.

Grand & Toy, stationers, Toronto, have been awarded the contract for the year's supply of stationery for use at the City Hall and other municipal departments.

B. Collie, of Artcheson & Co., Ltd., Christchurch, New Zealand, big paper importers, was a business visitor in Toronto last week.

W. S. Barber, of the Provincial Paper Mills, Limited, Toronto, is attending the Purchasing Agents' Convention in Cleveland, Ohio.

J. H. Damp & Co., paper dealers and stationers, who have been occupying premises on Richmond Street, Toronto, have moved their offices and warehouse to 68 Dundas Street, that city.

Going to meet his father, Edward King, who is employed at the Provincial Paper Mills at Georgetown, Ont., the two-year-old son fell from the railway bridge near the mill and was instantly killed.

Premier Drury, in Toronto, was strong in his praise of the announcement by Hon. W. S. Fielding that there should be a complete probe of the pulpwood question. It had been suggested by the Finance Minister that pulpwood exportation be prohibited. This, he said, would apply to private owners since provincial governments control the provincial timber lands. It is pointed out that the projected move might meet with some opposition from the Ontario Government, as the projected export duty might interfere with the pulpwood sales of the farmers of Ontario holding patented lands. Farmers who deal in small quantities of pulpwood find a ready market for their wood in the United States when situated along the border, and one well versed in the business fears that the proposed duty would eat up the small margin of profit on these pulpwood sales.

P. L. Colbert, of the National Paper Company, Valleyfield, Que., was a business visitor in Toronto last week.

T. L. Alstead, of Appleton, Wis., head of the Great Lakes Paper Co., Ltd., spent a few days last week in Port Arthur and Fort William. He was accompanied by Hardy Ferguson, widely known paper mill engineer. It is understood that Mr. Alstead was looking over sites for the proposed new three million dollar pulp and paper mill to be erected in that district.

The Reginald N. Boxer Co., Limited, manufacturers of hanging papers, are erecting an addition to their factory in New Toronto at a cost of $125,000. The building will be one story and basement, 300 x 300 feet, and will be of concrete and brick construction. The steel work is now in progress. The extension is necessary owing to the company's increase of business.

J. Ford & Co., of Portneuf, Que., have recently completed a mill building of steel and concrete, with two floors 80 x 200 feet, and are installing a cylinder machine 120 inches wide for the production of roofing felt and other building papers. The estimated output is 20 tons a day and it is stated that the plant will be in operation in three months' time. A concrete dam, 270 feet long and 20 feet high, which will replace the old dam, and double the power, is now being built.

The Ontario Paper Company, Limited, of Thorold, who some months ago bought extensive pulpwood limits on the north shore of the Gulf of St. Lawrence from the Quebec Government, and who, in accordance with the terms of the contract are to erect a pulp and paper mill thereon, are making a survey of a location for the proposed mill, the construction of which will not be begun for some time yet.

R. F. Dobberteen, of the Standard Paper Company, Kalamazoo, Mich., was a Toronto visitor last week.

PRESENTED SAFETY SHIELD

An interesting and enthusiastic meeting of the employees of the Provincial Paper Mills, Limited, Georgetown Division, was held at the mill at Georgetown, Ont., May 16, the occasion being the presentation to the workers at the mill of the shield and flag offered for competition by the Ontario Pulp and Paper Makers' Safety Association for the best accident prevention record during 1922. The Provincial Paper Mills, Limited, were the winners of the competition in class B, which class included all the pulp and paper mills in Ontario employing under 200 people. The record established by the company during the year was a very good one, namely 3 non-fatal accidents involving lost time amounting to 56 days, which is equal to 8.5 days lost time per full time worker. I. H. Weldon, President of the company occupied the chair at the meeting and gave a short address telling the employees how pleased the company was at the success of the Georgetown mill in winning the coveted honor and heading the list in the accident prevention competition. Mr. Weldon then called upon A. P. Costigane, secretary-engineer of the Association, who gave a short address on the economic aspect of accident prevention and impressing on the workers that if they intended to retain the shield in their possession they would require to face

keen competition on the part of other mills which were eagerly striving to secure the honor. Mr. Costigane then presented the flag to Sidney Sanders who received the trophy on behalf of the employees of the mill and who responded for them, emphasizing the benefits to all the workers when whole-hearted co-operation is given by every one in the prevention of accidents, not only to themselves, but to others. Mr. Sandets was followed by Mr. McWhirter, superintendent of the mill, who spoke briefly promising co-operation in an effort to retain the trophy for next year. Before the gathering broke up a resolution was adopted to the effect that all present would put forth every effort to win the shield again by establishing even a better record this year than last.

WESTERN QUEBEC PAPER MILLS LTD.

Announcement was recently made in the Press of the organization of the Western Quebec Paper Mills Limited. This new Company is organized to manufacture light weight specialties and tissue papers. The site obtained for the mill is at St. Andrews, Quebec, on the North River near its junction with the Ottawa. There is particular significance in the selection of this site, as it is probably on the same ground on which was erected the first mill in Canada some 120 years ago. Great changes have taken place in those years in the processes for paper manufacture. In those days rags were used as the material for fiber, whereas today we are making high grade papers, as the new mill will do, from chemical fibers manufactured from wood. There is one feature of the site which still has the same advantage that it had in the older days, namely the high quality of the water of the North River for paper-making purposes. It will be recalled that a little way further up the river are mills making some of the finest papers turned out on this continent. The location of the new mill will be picturesque as well as historic.

Considerable of the equipment is already arranged for and construction of the mill will proceed immediately with the prospect of manufacturing paper early in the fall. The financing of the proposition has been provided for by the sale of $225,000 in bonds, which are in the hands of Shaer, Morton & Co., Ltd., 120 St. James St., Montreal, and are offered to the public at the price of 97 and interest, yielding 6.75 per cent.

Practically the whole of the output of the mill is said to be contracted for and since there has been but little expansion in this line of paper manufacturing in Canada recently, it is not expected that the introduction of this new production will have any effect on the market conditions.

It may be added that the mill will be provided with excellent shipping facilities, both by rail and water. Another advantage in establishing the mill in a town such as the municipality of St. Andrews, is that there is not only a sufficient supply of ordinary labor but there is accommodation for the influx of new labor that always comes with a new industry, until additional houses may be built. The Company's extensive site will facilitate the development of a very beautiful paper mill town, which will be within 50 miles of Montreal on the direct line of the Canadian National Railway to Ottawa.

Among those interested in this proposition are Mr. R. W. Barclay, President Western Quebec Power Company; Mr. C. DeWolfe Reid who is well known to the industry as paper merchant and mill agent; Mr. C. W. Morton, Director of the Saguenay Lumber Company; Mr. William Currie, Director of the Dominion Paper Company; Mr. J. M. Robertson, Director of Southern Canada Power Company.

BROMPTON PAY MORE ON ARREARS

Brompton Pulp and Paper directors have declared another payment on account of arrears of preferred dividends, making 4 per cent in two months and reducing the arrears to 8 per cent.

The current payment of 2 per cent is for the quarter ended April, 1922, the payment made a month ago being for the preceding quarter.

The company continues to operate to capacity with improving prices in some lines. It is stated that some ground wood pulp was recently sold as high as $50 per ton, although this is not as yet the standard price. When it is recalled that this commodity sold as low as $25 per ton a year or more ago, it will be seen that there has been a marked improvement in the market.

COURSE OF PAPER PRICES IN ENGLAND

There is a definite feeling in England that paper prices must advance without delay, says the London "Times Trade Supplement". Very probably it will have been decided to make an all-round advance in the selling price of printing and E.S. writing papers before these notes appear (April 28). An important meeting will have to be held at which the subject will at least have been subjected to full examination. It is common knowledge that much of the paper now being sold is actually made at a loss. The policy of the British papermakers has been to anticipate falling costs in the endeavour to stimulate confidence and promote business. The policy has proved very successful, but lower costs have not matured in accordance with anticipations. There was ground for thinking that the cost of living would progressively decline, in which event a smaller wage bill would automatically have come into operation. Yet wages have not been reduced, and within the last few days a further slight concession in railway goods rates has been offset by the advance in coal prices by about 12s. per ton, consequent upon an increased demand for coal for shipment. Papermaking materials have advanced, and some anxiety is felt in regard to the effect of the Swedish lock-out upon the future trend of wood-pulp prices. — Commercial Intelligence Journal.

A generous spirit is better than gold, and does not need gold to show itself—The Westland.

Mr. Archie Fraser, of Frasers Limited, Edmundston, N.B., who has just returned from a trip to England was in Montreal last week.

At last week's meeting and luncheon of the Commercial Stationers Association of Toronto, Percy Grand, of Grand & Toy, gave an excellent address on "the cost of doing business."

Mr. S. J. B. Rolland and daughter, are spending a holiday in France.

BRITISH TRADE NEWS

(From Our London Correspondent)

London, May 7, 1923.

The feeling in the British paper industry on trade outlook is more optimistic. At present business is developing, mills are getting more busy and unemployment is being gradually reduced. Dr. E. C. Snow in a short paper read before the Royal Statistical Society, on "Trade Forecasting and Prices," has stated that the tide of industrial prosperity was flowing and that, although it was a long way from the full tide, it was, nevertheless, moving at such a rate as to promise that state within reasonable time. He thought that view under-estimated the effect of certain retarding factors which were in operation in the upward movement of the present industrial cycle to an extent far greater than in previous cycles. At the height of the boom in the early part of 1920 most British industries were equipped for a production far greater than had ever been attained before the war, and certainly far greater than home consumption plus prospective export trade at present. Over-production, actual or potential, was the inevitable result and this in itself retarded recovery from the depression. It would be of the utmost possible value to certain industries at the present time, if it were possible to disseminate statistical information among those engaged in them showing productive capacity in comparison with that of pre-war and of prospective demand.

British Exports

Turning to the recent export figures of the British paper industry, one finds that there is a considerable development after analysing them. Exports for the three months, January to March, show that they reached 1,021,839 cwts, compared with 404,051 cwts for the corresponding period in 1922. This is a sign of progress and the packing and wrapping sections have shipped—not counting home consumption—118,427 cwts, as against 64,448 cwts for the three months in 1922. Printing paper, which includes newsprint, was exported to the extent of 686,522 cwts, an increase of 587,645 cwts. The increase is largely attributable to Canada and Australia with other colonies and dominions purchasing larger quantities. The exports of tissue paper are about steady, while the trade in roofing papers is completely lost. Mill board, strawboard, and cardboard have only increased in the exports from 16,132 cwts to 23,129 cwts.

The exports in printing paper (newsprint included) are as follows:—To Canada 4,429 (695 for the first three months in 1922); Australia, 411,315 cwts (76,789 cwts in 1922); New Zealand, 57,420 cwts (18,126 cwts); Ceylon, 4,128 cwts (2,234 cwts); Straits Settlements 2,374 cwts (1,031 cwts); India, 63,625 cwts (21,103 cwts); South Africa, 32,126 cwts (13,512 cwts); other British possessions 7,571 cwts (3,944 cwts); U. S. A., 20,553 cwts (1,608 cwts); France 17,224 cwts (13,376 cwts); other foreign countries 65,657 (46,459 cwts).

British Imports

The total imports for the first three months of this year have reached 2,676,230 cwts compared with 2,081,533 cwts for the corresponding period in 1922. Shipments from Canada have not actually started yet, nor from Newfoundland, as it is too early in the year for them.

The countries competing with Canada in packings and wrappings are as follows:—From Canada 24,976 cwts (24,749 cwts in 1922 from January to March 31); Finland, 94,367 cwts (76,213 cwts); Sweden, 308,471 cwts (205,969 cwts); Norway, 173,563 cwts (142,867 cwts); Germany, 185,115 cwts (107,702 cwts); Belgium, 20,370 cwts (21,625 cwts); other countries 58,453 cwts (63,948 cwts).

Newsprint supplies are recorded as follows:—From Sweden, 110,091 cwts (100,579 cwts in 1922); Norway, 134,897 cwts (127,621 cwts); Germany, 33,284 cwts (37,762 cwts); Belgium, 2,956 cwts (9,697 cwts); U. S. A. 4,777 cwts (1,298 cwts); Canada, 55 cwts (none for the same period in 1922); Newfoundland, nil, (10,280 cwts); other countries 293,296 cwts (275,801 cwts).

Coated papers were imported as follows:—From Germany 14,171 cwts (7,852 cwts). Here we see that the occupation of the Ruhr by the French has not materially hampered the German mills. From Belgiun 4,247 (4,956 cwts) which shows that the occupation is interfering with the Belgians. From France 3,734 cwts (3,620 cwts); U. S. A. 1,565 cwts (1,709 cwts); other countries 6,205 cwts (2,640 cwts).

Strawboard—From all sources 818,285 cwts as against 576,592 cwts for the three months in 1922.

Millboard and cardboard—259,724 cwts, as against 141,974 cwts.

Wood Pulp Shipments

There is more liveliness in the British wood pulp market and sellers are making inquiries as to supplies. The demand for chemical pulps is fair; for groundwood prompt supplies prices are firmer. Judging by the reports reaching London, mills are once again getting into working order in Scandinavian circles after the recent labor troubles.

The total supplies of pulp reaching the United Kingdom for the first three months of this year, reached 192,306 tons, compared with 97,249 tons for the corresponding period in 1922. The countries sending shipments were as follows:—

Bleached chemical (dry)—From Finland 613 tons (202 tons in 1922); Sweden, 424 tons (895 tons); Norway, 4,509 tons (2,794 tons); Germany, 85 tons (275 tons); other countries 378 tons (290 tons).

Unbleached Chemical (dry)—From Finland 15,264 tons (5,208 tons in 1922); Sweden 36,404 tons (17,359 tons); Norway, 19,064 tons (7,323 tons); Germany 74 tons (234 tons); other countries 3,086 tons (1,638 tons).

Groundwood (wet)—From Canada 2,778 tons (7,700 tons); Sweden, 11,381 tons (8,054 tons); Norway 94,664 tons (42,773 tons); other countries nil.

Groundwood (dry)—From all sources 2,367 tons compared with 532 tons in 1922.

Pulp prices to-day in London are about as follows:—

Bleached sulphite (No. 1) £23 1-2; easy Bleaching £16 1-2; Newsprint Sulphite £15 3-4; Unbleached Soda (No. 1) £15 1-2; Soda Kraft (strong) £15; groundwood (wet) £15; groundwood (wet) £5 3-4; groundwood (dry) £11 1-2.

Clarke City

It is reported here that arrangements are being made to redeem the balance of the outstanding debentures of the Imperial Paper Mills Ltd., of Gravesend, Kent. In 1920 £800,000 of 7 1-2 p. c. debentures were issued and the guarantees were given, both as to principal and interest, by the Amalgamated Press, Ltd., of London, one of the leading publishing houses. The debentures were issued for the purpose of acquiring control of the Gulf Pulp Paper Co. at Clarke City, Que., a pulp mill and timber limits in Canada. Of the total £200,000 has been redeemed and the balance will be paid off at £103 in July next.

Dividends

John Dickinson and Co., Ltd. have made a net profit of £134,401 10s. and a dividend of 10 p. c. has been declared for the year.

Wiggins, Teape and Co., Ltd., have also declared a dividend of 5 p. c.

All firms speak well of their trading since January last.

UNITED STATES NOTES

The International Paper Company has completed arrangements under which the Metropolitan Life Insurance Company will insure all the employees of International and its entirely owned subsidiary companies. All employees of at least six months' service will be eligible without examination and will bear a small weekly cost, the remainder to be paid by the company. The plan includes life insurance, protection against permanent and total disability, sick and accident benefit and special indemnity for accidental death or dismemberment. The employees have been divided into three groups according to their annual earnings and the amounts of various benefits have been graded proportionately. Reports have been current for some time past that the International was to merge with some of the larger Canadian paper manufacturing companies. This report was officially denied by officers of the company last week.

C. R. Berrien, vice-president of the Central Union Trust Company, M. M. Marcuse of the Bedford Pulp and Paper Company, Richmond, Va., and William Mason Smith have been elected directors of the American Writing Paper Company, increasing the board from fifteen to eighteen members. The directors have elected as new officers, M. E. Marcuse, vice-president; L. S. Noid, treasurer, and James T. Robinson, secretary.

Formulation of Treasury Department rules governing the classification of standard newsprint paper under the Tariff Act is awaiting the personal decision of Secretary Mellon. The Tariff Act admits imports of standard newsprint duty free, but a long controversy has been waging between the Treasury and publishing interests as to what grades of paper should be admitted under that classification. Publishers have insisted that the law is broad enough to permit the free entry of special types of paper used in photographic and other supplements.

The United States continues to be a strong buyer of Swedish wood pulp, according to statistics just received. American paper mills have already purchased 100,000 tons of bleached and unbleached sulphite since the beginning of the year, and it is predicted that this figure will at least be doubled before the end of the year. The report also says that 95,000 tons of sulphate cellulose have been purchased for delivery to America this year.

Five measures to conserve the wood pulp supply are suggested by O. M. Porter, secretary of the woodlands Section of the American Paper and Pulp Association, in the Association's monthly bulletin. They are: First — a comprehensive survey of domestic supplies; second — a careful study of the probable costs and yields from artificial reforestation; third — the development of practical plans for forest management to insure a continuous production; fourth — sound Federal and State forest legislation, and, fifth — forest education for the public, the owner and the operator. Mr. Porter states that $1,000,000,000 is invested in pulp and paper mills in the United States, that the annual paper production is valued at $1,000,000,000 and that $250,000,000 a year is spent for pulpwood and wood pulp.

Development of a non-shellac phonograph record by European chemists, making it possible to use blotting paper, leather, cardboard, or other paper, linen or cotton cloth as a base, has interested American manufacturers who have made arrangements for beginning production shortly. The new process, instead of requiring the moulding of a record enables the discs to be printed, and to be turned out on rotary presses at the rate of fifty thousand a day. The new method of manufacture, its originators say, has the advantage of making the records flexible, unbreakable and non-chippable. To produce these records on a quantity scale, the Strong Record Corporation has been organized with headquarters and laboratory at 206 Fifth Avenue and factory at Point Pleasant, N. J.

The directors of the United Paperboard Company have declared a dividend of 6 per cent. on the preferred stock for the fiscal year, ended May 26, 1923, payable July 2, to stockholders of record June 7. This is the first dividend declared on the preferred stock since the regular quarterly payment of 1½ per cent. was passed in November, 1920.

The labor situation in the paper industry, according to the bulletin of the American Paper and Pulp Association, is being clarified with agreements on increased wage scales which will insure the manufacturers against strikes, though increases are general. In the Holyoke district the fine paper makers are faced with wage demands which would equal the peak figure of 1920.

NEW PULP MILL FOR QUEBEC

A new groundwood pulp mill, with a daily capacity of 100 tons, will be built this summer at Sillery, near the city of Quebec, by the Quebec Pulp & Paper Company, Limited, a new corporation organized through the efforts of John D. Roche of Montreal. The plans include provisions for expanding the plant to produce sulphite pulp and newsprint paper whenever it is desired to make the necessary additions. The mill will be exceptionally well located in regard to shipping facilities, having both rail and water connections and the company is also said to have made favorable arrangements for its supply of pulpwood.

The financial and other details have all been arranged and a public announcement, including the names of those concerned in the enterprise, which include some well known to the industry, will be made soon.

The Markets

CANADIAN TRADE CONDITIONS

Although it is generally admitted that the future holds much that is promising in the pulp and paper arena the fact remains that the distributing end of the industry in Ontario is still lagging. Wholesale paper merchants are not doing the business they were looking for at this season of the year and the cause is generally ascribed to the backward spring. Some distributors report slightly increased sales so far this May but the bulk of the trade express disappointment at the results. Few of the retailers, printers and publishers are not stocking paper to any extent although there is a bright spot in lines such as bonds, writings and other lines of paper used by the converting trade, uch as the manufacturing stationers, who are fairly busy. The paper box making trade has not yet revived following its recent decline in volume of business and the fact seems to be that the backward spring upset all calculations of the various lines of trade that form the feeders for the paper box industry. There has been a marked falling off in the consumption of standard lines of paper boxes although many of the firms have been making good on the developing and sale of specialty boxes.

In contrast to the wholesale paper business the manufacturing trade continues fairly busy and in nearly all branches — especially that of newsprint — there is a well-sustained demand, with plants all running at capacity. The book paper mills have orders booked well ahead and there has been no falling off in demand for the products. The changed and changing ratio of cost and price has caused one large manufacturer of book papers to withdraw prices and quotations. In the case of board manufacturers the mills are reported to be not more than three weeks ahead with orders, which is considerably below the average.

The pulp market presents no new features and prices are unchanged. Generally speaking there is little activity and few of the paper mills are stocking, the feeling prevailing that prices will ease off somewhat towards the end of the month now that water and more power are in prospect following the spring break-up.

NEW YORK MARKETS

New York, May 19. — (Special Correspondence). — Mill activity continues on a broad scale, and there is a fairly good demand from retail quarters for most kinds of paper although it is commonly admitted current buying lacks the snap that was such a feature of the market up to a short time ago. Consumers seem more hesitant about placing orders at present, which is not an unusual condition at this period of the year, and it appears certain that the paper that buyers are absorbing today is moving almost directly into consumption. Moreover, a great many users, including a large proportion of printers and publishers and other big consumers, have appreciable supplies of paper on order, and these are in a majority of cases holding off from additional purchasing while depending on mill deliveries.

There is little change to report in prices of paper. The price tone is steady to firm. The tendency in most instances is decidedly upward, yet there are numerous indications that manufacturers are exerting every possible effort to prevent inflation, and presumably are considering more the maintenance of demand than the advancement of prices. Raw material costs are changing in favor of manufacturers in at least some instances though this is far from always the case. Wood pulp is holding firm, as are many grades of rag stock; on the other hand, prices of low grades of papermaking rags and on most descriptions of waste paper are on a more favorable level for consumers than they were a few weeks ago. Labor, however, is the all important factor today, and it may be that the wage increases recently put into effect will ultimately result in higher quotations on paper.

Sentiment in the trade regarding an advance in newsprint prices seems to be changing, at any rate in certain quarters. Despite the many predictions that higher labor and raw material costs would necessarily oblige manufacturers to increase print paper prices, probably after July 1 to $80 a ton, compared with a current general quotation of $75, there is a well defined opinion in some parts of the trade that they will not materialize and that prices will remain unchanged over the third quarter of the year. Of course, this is a problematical matter at the moment, but it is a subject which is being given a great deal of attention by paper men, and it is interesting to note that sentiment concerning it is so well divided.

Newsprint consumption this year is running ahead of all previous records, and it is indicated that 1922 consumption figures, which were the largest in history, will be exceeded by about 12 per cent this year. Newsprint mills in both the United States and Canada are being taxed to meet the demand, and while it is commonly admitted that there is some justification for an advance in print paper prices on account of higher manufacturing costs, it is pointed out that consumption could be very easily curtailed by elimination of many special features and supplements, especially in the Sunday editions of newspapers, and that for this reason manufacturers will be loath to do anything which might tend to restrict consumption unless it were absolutely necessary.

"The basic strength of the paper market in general is indicated by the fact that there seems to be no speculative demand; the orders being received being strictly to meet pending requirements." This is the way in which the American Paper and Pulp Association sums up the prevailing situation in its monthly bulletin. The association goes on to say that "caution, but not timidity, the suggestion made by Secretary Hoover before the United States Chamber of Commerce, expresses the attitude actually being taken by the paper industry at this time. The paper manufacturers, in the face of the heaviest demand ever known in some branches of the industry, are not taking advantage of the increasing cost of raw materials and

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of labor to increase prices. In one important branch of the industry, for example, prices are 98 per cent higher than in 1914, but costs are 101 per cent higher."

Some manufacturers of book paper are reported to have revised quotations on certain of their lines, following the lead of one of the large companies recently reported. Prices of book paper display much strength, and demand for this class of paper continues active. That is, the contract movement is good, and publishers are augmenting their supplies to a fair extent although retail buying has subsided.

Fine papers are quotably firm and are in steady call. Wrappings and tissues are moderately active, with no further change reported in quotations. Box boards have firmed up again after having shown a sagging trend for a time. Most manufacturers in the East are quoting $62.50 per ton f. o. b. New York for plain chip board, and $65 for news board, though one of the largest mills in this part of the country is said to be naming $62.50 on both news and chip. Demand for board is regarded as good. Corrugating boards and other lines used in the manufacture of fibre shipping containers and folding boxes are moving freely, while demand from the set-up box trade is relatively quieter.

GROUND WOOD. —The market for mechanical pulp is characterized by fair trade activity. It is evident that consumers are buying chiefly against direct requirements and yet the movement into consuming channels is fully up to normal for this season, if not in excess of normal. Available supplies appear to be easily ample to cover the wants of buyers, however, and prices consequently are just about holding their own, exhibiting little change in either direction. Domestic producers are reported securing about $37 to $38 a ton f. o. b. grinding plants for prime spruce ground wood for prompt shipment, with quotations varying depending on the situation of the consumer and the freight involved from the producing to the delivery point. Canadian grinders are said to be marketing considerable ground wood in the United States at present, and to be securing between $47 and $50 a ton delivered at consuming mills for spot shipments.

CHEMICAL PULP. —Actual demand for chemical wood pulp is of limited compass. Consumers are placing orders in a most reserved manner, evidently being altogether unwilling to buy other than in a volume necessary to cover immediate needs, and demand therefore is spotty and of insufficient breadth to have influence on prices. Nevertheless the price tone is firm. Importers are bullishly inclined and are fully maintaining operations. Foreign prime unbleached sulphite is quoted on the dock at New York at 3.35 to 3.50 cents per pound and Scandinavian kraft pulp at around 3.40 cents, and proof is not lacking that very little supply of these pulps is to be had at less than these figures. Foreign bleached sulphite is quoted at from 4.50 to 5 cents a pound ex dock for the No. 1 grade, and around 4.25 cents for the No. 2 quality. Papermakers apparently are holding off in buying because they have considerable pulp on order for first open water shipment out of Sweden, and because they desire to wait and see what effect the arrival of these supplies will have on prices.

RAGS. —The market for papermaking rags is in a rather stationary position at present. Low grades such as are used by roofing paper mills incline downward, and buyers doubtless are effecting some purchases at

slight recessions in price, but most grades are holding their own in price and seem to be marked by a comparatively good demand from mills. Importations of rags are heavy. Large shipments are arriving day by day, and it is presumed that the great bulk of these supplies are roofing stock, thus explaining the relative easiness in prices of domestic rags of similar classification.

Quotations on No. 1 roofing rags range around 1.40 cents a pound f. o. b. New York for No. 1 packing, and 1.30 cents for the No. 2 grade. New white shirt cuttings have eased off slightly to where sales to paper mills at 13 cents a pound have been reported, and other grades of new cuttings are probably available in at least some quarters at slightly cheaper figures than recently prevailed. Old white rags are quotably steady, as are blues. Repacked thirds, and blues are fetching around 2.75 cents a pound at dealers' shipping points, and miscellaneous packing about 2.25 to 2.40 cents, depending on quality.

PAPER STOCK. —There is a fair aggregate movement of old paper. Some grades are freely wanted by mills, while others are more or less neglected; the result is that prices in some instances display steadiness, whereas in others the trend is distinctly downward. Old folded newspapers are steady at around 1.15 cents a pound f. o. b. New York, and No. 1 mixed paper is readily bringing 90 to 95 cents a hundred pounds New York. Old kraft paper also is steady at 2.10 cents a pound New York, and shavings are quoted at an average of 4.25 cents New York for No. 1 hard white and 3.50 cents for No. 1 soft white shavings. The weakest class of old paper is flat stock. Few mills show interest in books and magazines, and it is problematical just how cheap they really are. Offerings by dealers at 2 cents a pound for No. 1 heavy magazines are reported but there are few buyers at this price basis, and indications are purchases are being made at lower levels.

OLD ROPE AND BAGGING. —The market for old manila rope has quieted and prices have eased a little following a long period of pronounced strength and activity in this commodity. The principal consuming mills are reported out of the market temporarily, and prices of domestic manila rope in No. 1 condition have sagged to about 6.50 cents a pound at dealers' shipping points and ranging up to 6.75 cents. Old bagging is dull and largely nominal in price. Around 1.25 cents per pound and 90 cents a hundred pounds at shipping points for No. 1 scrap bagging and roofing bagging, respectively, are the quotations generally named by dealers.

LINK-BELT PITTSBURGH OFFICE MOVES

Notice has recently been received of the removal of the Link-Belt Company's Pittsburgh branch office from their old quarters at 1501 Park Building to their new and more commodious offices at 353 Fifth Avenue. Mr. T. F. Webster, manager of the Pittsburgh office says that larger space and the more convenient location was imperative because of the extraordinary volume of business transacted during the past year and which promises to remain in full swing at least for the coming fiscal year.

Mr. Hardy S. Ferguson, consulting engineer, of New York, was a visitor to Montreal last week.

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Tenders for Pulpwood and Timber Limit.

Tenders will be received by the undersigned up to and including the 22nd of June, 1923, for the right to cut pulpwood and timber on a certain area situated in the watershed of the Trout and Chapleau Rivers in the districts of Sudbury and Algoma, comprising an area of 4,049 square miles.

Tenderers shall state the amount per cord on pulpwood that they are prepared to pay as a bonus in addition to dues of 80 cents per cord for spruce and 40 cents per cord for other pulpwood, or such other rates as may from time to time be fixed by the Lieutenant-Governor in Council, for the right to operate a Kraft pulp mill and a paper mill.

Tenderers shall also be required to say what they are prepared to pay, per thousand feet Board measure, for the following classes of timber, over and above the upset prices in addition to Crown dues.

Red and White Pine	Upset price — $5.00 per M. ft. B. M.
Spruce (too large for pulpwood)	$5.00 per M. ft. B. M.
Jackpine (banksian)	— $2.50 per M. ft. B. M.

The Crown dues on Pine including Jackpine being $2.50 and on Spruce $2.00 per M. ft. B. M., or such other rates as may from time to time be fixed by the Lieutenant-Governor in Council.

The successful tenderer shall be required to erect a mill or mills within the limit or at some point in Ontario approved by the Minister, and to manufacture the wood into Kraft pulp, and also such portion thereof into Kraft paper when required so to do.

Parties making tenders will be required to deposit with their tender a marked cheque, payable to the Honourable the Treasurer of the Province of Ontario, for fifty thousand dollars ($50,000), which amount will be forfeited in the event of the successful tenderer not entering into agreement to carry out conditions, etc.

The said $50,000 shall remain on deposit until the Kraft pulp mill, as provided by terms and conditions of sale, is erected and in operation. Any timber cut in the meantime shall be subject to payment of dues and bonus as accounts for same are rendered. After the said pulp mill is erected and in operation the deposit of $50,000 may be applied on account of bonus dues as they accrue, but the regulation dues as mentioned above shall be paid in the usual manner as returns for cutting of wood and timber are received and accounts rendered.

The highest or any tender not necessarily accepted.

For particulars as to description of territory, capital to be invested, etc., apply to the undersigned.

All tenders should be enclosed in sealed envelopes and marked plainly on outside "Tender for Trout-Chapleau Pulp and Timber Limit."

BENIAH BOWMAN,
Toronto, April 16th, 1923 Minister of Lands and Forests.

N. B. — No unauthorized publication of this notice will be paid for.

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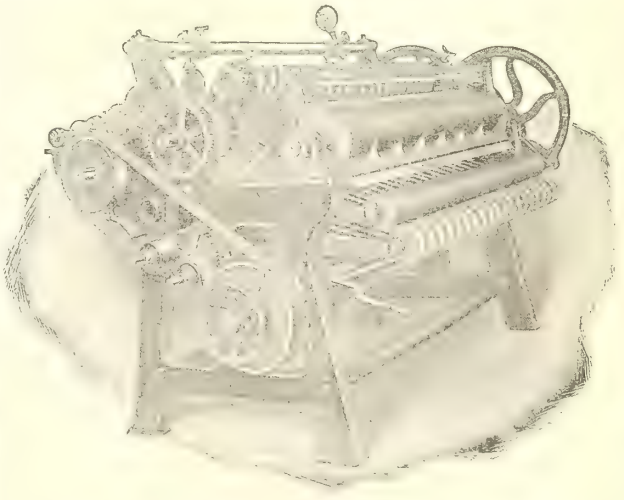
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Buyers who are unable to find in the classification here given such machinery or supplies as they desire are invited to write Service Dept., Pulp and Paper Magazine, Gardenvale, Que., who can, in all probability, refer them to proper sources.

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Ross, J. O. Engineering Co.
Sturtevant, B. F. & Co. of Can., Ltd.

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Sturtevant, B. F. Co.

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Port Arthur Shipbuilding Co., Ltd.

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Imperial Trading Co.
Kalbfleisch Corporation.

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Antimonial Lead Pipe and Sheets:
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Canada Metal Co., Ltd., The
McAvity, T. & Son.
Tallman Brass & Metal, Ltd.

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Northern Foundry & Machine Co., Ltd.

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Canadian Barking Drum Co.
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Can. S. K. F. Co., Ltd.
Kingsbury Machine Works.

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Canadian Fairbanks-Morse Co., Ltd.
Claflin Eng. Co.
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Northern Foundry & Machine Co.
Port Arthur Shipbuilding Co., Ltd.
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Waterous Marine Works Co., Ltd.

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See Wire Cloth

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McAvity, T. & Sons, Ltd.
Northern Foundry & Machine Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
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The Steel Trough & Machine Co., Ltd.

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Canadian Equipment Co., Ltd.

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Hendrick Manufacturing Co.

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Imperial Trading Co.
Kalbfleisch Corporation, The.

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Fraser & Chalmers, Canada, Ltd.
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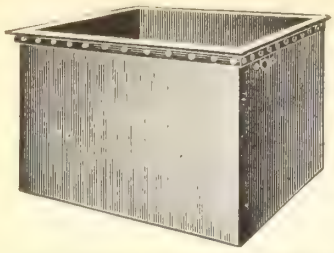
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Waterous Engine Works Co., Ltd.

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Cluache
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Tyler, W. S. Co., The
Waterous Engine Works Co., Ltd.

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Tyler, W. S. Co., The
Johnson Wire Works, Ltd.
John Date.

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Sewell, J. W.

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Combe, F. A.
Montabone, A. J. F.
Taylor, Ltd., H. S.

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Reed Co., Ltd., Geo. W.
Ross, J. O. Engineering Co.
Taylor, Ltd., H. S.

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Ferguson, Hardy.
Hamilton Gear & Machine Co.
Hardy, George.
Jenssen, G. D. and Co.
Kimball, Herbert S.
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Montabone, A. J. F.
Sewell, James W.
Stebbins Eng. & Mfg. Co.
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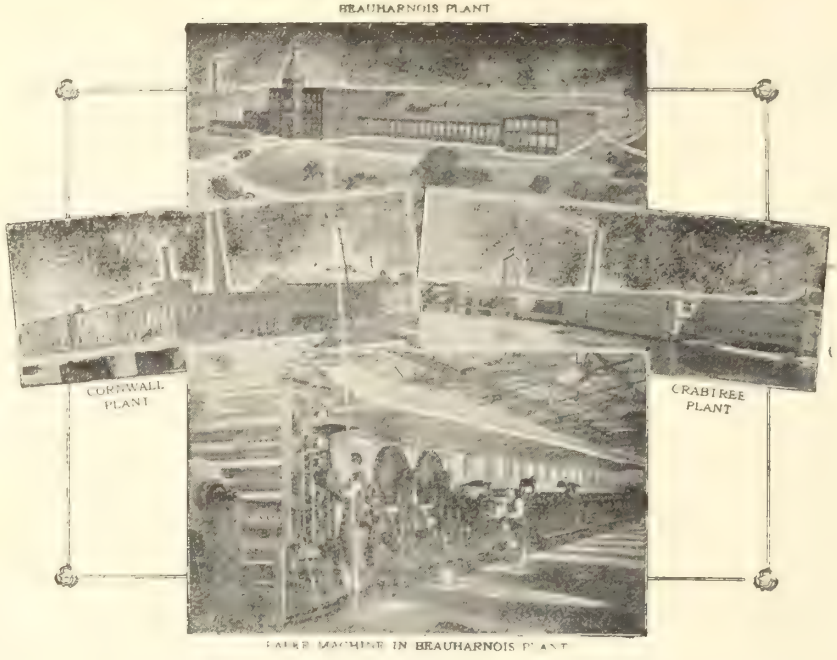
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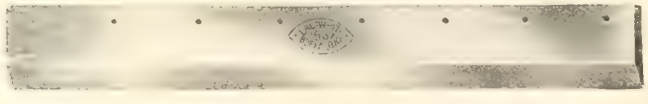
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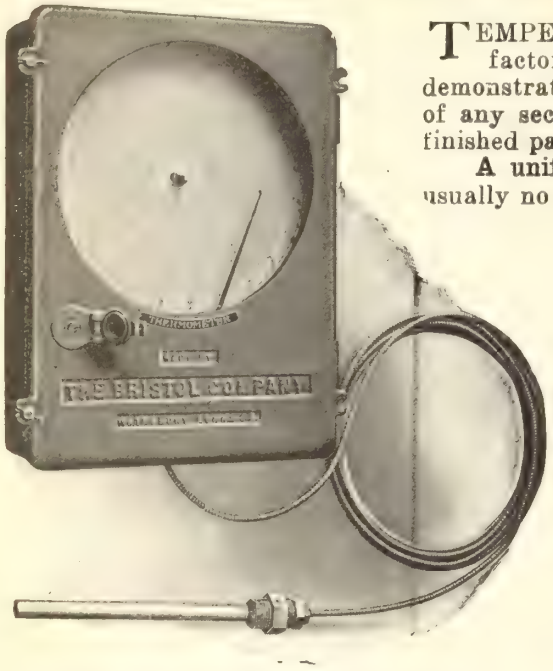
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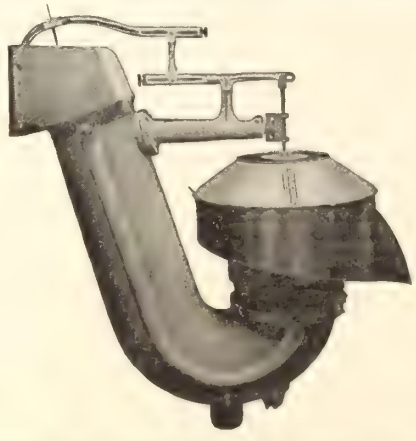
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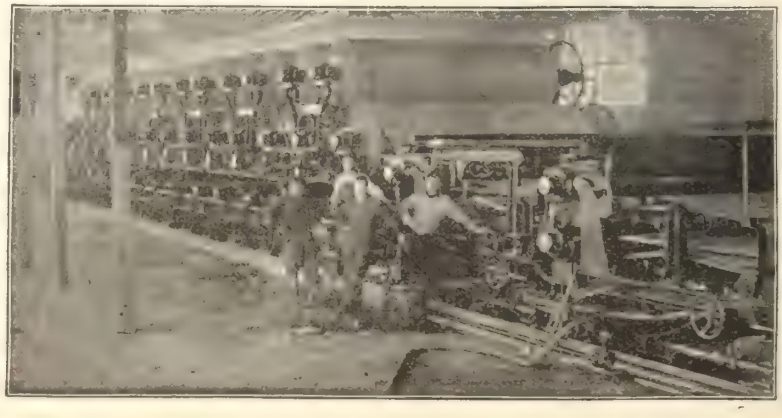
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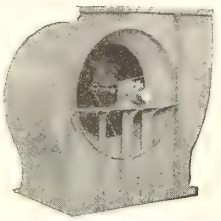
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ALPHABETICAL LIST OF ADVERTISERS

See Classified List on Page 73.

Unpaged advertisements appear in every other issue

A

Alberene Stone Co., Ltd. .. ..
Abitibi Power & Paper Co. Ltd .. 84
Acer, J. A. H. & Co., Ltd. 74
American Voith Contact Co., Inc. ..
American Stone Co. 24
American Woodpulp Corporation .. 24
Ayers, Limited 11

B

Babcock & Wilcox, Ltd .. ..
Barrett Co., Ltd., The 10
Barber, W. J. & Co., Ltd. .. ..
Bathurst Company, Ltd. 82
Bates & Innes, Ltd. 25
Beams Manufacturing Association
Bertrams, Limited .. ..
Belgo Paper Co., Ltd., The 82
Beveridge Supply Co., Ltd. 78
Black-Clawson Co., The 89
Bolton, John W. & Sons, Inc. 26
Boving, Hydraulic & Engineering .. Company, Ltd. .. ..
Bristol Co., The 89
Brompton Pulp & Paper Co., Ltd. .. 82
Burgess, E. T. 30

C

Canada Metal Co., Ltd. 36
Cameron Machine Co. 74
Canadian Combustion Co., Ltd. .. ..
Canadian Baker Co. .. ..
Canada Foundries & Forgings, Ltd. 72
Canadian DesMoines Steel Co., Ltd. 70
Canadian Elixman Co., Ltd. .. .. ..
Canadian Equipment Co., Ltd. 39
Canadian Fairbanks-Morse Co., Ltd. 32
Canadian Ingersoll-Rand Co., Ltd
Canadian Milk Products Ltd. 1
Canadian Johns-Manville Co., Ltd.
Canadian Nashua Paper Co., Ltd. ..
Canadian Paperboard Co., Ltd. 4
Canadian Link-Belt Co., Ltd. .. .. ..
Canadian Robert Dollar Co., Ltd...
Canadian Pipe Co., Ltd. .. ..
Canadian Sirocco Co., Ltd. 8
Canadian S K F Co., Ltd 1
Canadian Vegetable Parchment Co Limited .. ..
Canadian Westinghouse Co., Ltd. ..
Carey, Jas. L. 22
Capital Wire Cloth & Mfg. Co., Ltd 26
Christie, George Ltd. 80
City of Hull .. ..
Claflin Engineering Co., The 22
Clayton, Neil & Jones, Ltd. 9
Combustion Engineering Corporation, Ltd. 5
Crane, Ltd. .. ..
Crittsinger, Burt Co., Inc. 71
Cleveland Stone Co., The .. ..

D

Date John 10
Deitcher Brothers 87
Dept. of Lands, Forests & Mines Ontario 18-70
Dodge Mfg. Co. of Canada, Ltd. .. 7
Dominion Belting Co. .. ..
Dominion Engineering Works, Ltd. 29
Dominion Oxygen Co., Ltd. .. .. ..
Donnacona Paper Co., Ltd., The .. 24
Don Valley Paper Co., Ltd., The .. 24
Downingtown Mfg. Co. 25
Dryden Paper Co., Ltd. 24
Dunlop Tire & Rubber 19
Dunham, C. A. Co. .. ..

E

Elixman Paper Core Co., Inc. .. ....
Elk Fire Brick Co. of Canada, Ltd.
English China Clays, Ltd. .. .. ..
Engineering & Machine Works of Canada, Ltd. .. ..

F

Ferguson, H. S. 23
Ford, J. & Co. .. ..
Foundation Co., Ltd. 22

G

Galt Knife Co., Ltd. 27
Garden City Paper Mills, Ltd. .. ..
Geigy Co., Inc. 72
Goldie & McCulloch Co., Ltd... .. ..
Goold, Shapley & Muir Co., Ltd. .. 26
Gottesman, M. & Co. .. ..
Grasselli Chemical Co., Ltd., The ..
Graton & Knight Mfg. Co., Ltd. .. 1
Griswold & Co. .. ..
Gutta Percha & Rubber, Ltd. 12

H

Hamblet Machine Co. 71
Hamilton Gear & Machine Co. 74
Hamilton Wm. Co. of Canada, Ltd. 89
Hans Renold of Canada Ltd. 21
Hardy, George F. 22
Harland Engineering Co. of Canada, Limited .. ..
Hay Knife Co., Ltd., Peter .. .. ..
Hendrick Mfg. Co... .. ..
Hercules Powder Co. .. ..
Holliday,, L. B, & Co., Ltd. .. ..
Huestis, A. M. .. ..
Hydraulic Machinery Co., Ltd. 3

I

Ideal Patents Corporation 20
Industrial Engineering Co., Ltd. .. 86
International Business Machines Co., Ltd. 23
International Pulp Stone Co., The 2
Interlake Tissue Mills, Ltd. .. ..

J

Jenking Brothers, Ltd. .. ..
Jenssen Co., G. D. 23
Johnson Wire Works, Ltd., The .. 30
Jones & Glassco, Redg .. ..

K

Kalbfleisch Corporation, The .. ..
Kander Paper Stock Co., Ltd., The 24
Kenwood Mills, Ltd. 13
Kimball, Herbert S. 23
Kingsbury Machine Works 19
Klipstein & Co., Ltd. A. .. ..

L

Lacey, James D. & Co. 71
Largeloef Trading Co. 67
Langston, Samuel M. Co. 27
Laurentide Co., Ltd. 84
Lawrence Machine Co. .. ..
Lombard & Co. Inc. 27

M

Management Engineering & Development Co., The 23
Mead, Patton & Co., Ltd. 26
McAvity T. & Co., Ltd. .. ..
McKinnon Steel Co., Ltd. 87
Mills Works & Machinery, Ltd. 80
Miramichi Quarry Co., Ltd. The .. 21
Montabone J. A. F. .. ..
Montreal Locomotive Works, Ltd. .
Morrison, J. L. Co. 78

N

National Paper Stock Co., The 24
Niagara Wire Weaving Co., Ltd. The 74
Northern Crane Works, Ltd. 70
Northern Electric Co., Ltd. .. .. ..
Northern Foundry & Machine Co. .. 6
Norwood Engineering Co. of Canada, Limited 26

O

Oliver Continous Filter Co. 4
Ontario Wind Engine & Pump Co., Limited .. ..

P

Pacific Coast Pipe Co.,. Ltd. 28
Patton, Mead & Co., Inc. 26
Peacock Brothers, Ltd. 16
Penmans Limited 20
Pollack Bros. & Co., Ltd. .. ..
Port Arthur Shipbuilding Co., Ltd... Porritts & Spencer Co., Ltd. 72
Price Bros. & Co., Ltd. .. ..
Price & Pierce, Ltd. 82
Provincial Paper Mills, Ltd. 76
Pusey & Jones Co., Ltd. .. ..
Pulp & Paper Trading Co., Ltd. .. 71
Pulp & Paper Mill Accessories, Ltd. 85

Q

Quarries, C. & M Co. 22

R

Reed, Geo. W. & Co., Ltd .. ..
Relph, Darwen & Pearce 86
Rolland Paper Co., Ltd. 72
Ross Engineering of Canada Ltd. .. 27
Russell Brothers 72

S

Sadler & Haworth 2
Sewall, Jas. W. 22
Sherbrooke Machihery Co., ... 9
Smallwood Stone Co., The 24
Smallwood Low Stone Co., Ltd. .. 27
Smith Howard Paper Mills, Ltd. .. 78
Spanish River Pulp & Paper Mills, Limited 86
Steel Trough & Machine Co., Ltd. .. 74
Sterling Electrical Co., ... 22
Stinson-Reeb Buliders' Supply Co., Limited 71
Stebbging Engineering & Mfg. Co. .. 22
St. Maurice Paper Co., Ltd. .. .. ..
Sturtevant Co. of Canada, Ltd. .. 87

T

Tallman, Brass & Metal, Ltd. .. ..
Taylor,, J. A. 80
Taylor, H. S., Ltd. 23
Texas Gulf Sulphur Co. 32
Ticonderoga Machine Works .. ..
Tippett & Co., Ltd. 28
Tyler, W. S. Co., The 27
Trimbey Machine Works .. ..

U

Underfeed Stoker Co. of Can., Ltd.
Union Screen Plate Co. of Canada, Limited 87
Union Sulphur Co., The 80
United Wire Works Ltd. 28

V

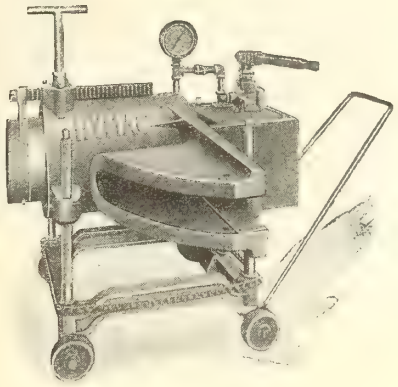
Vera Chemical Co. of Canada 72
Victoria Foundry Co., Ltd. 21
Voorhees Rubber Mfg. Ltd. 17

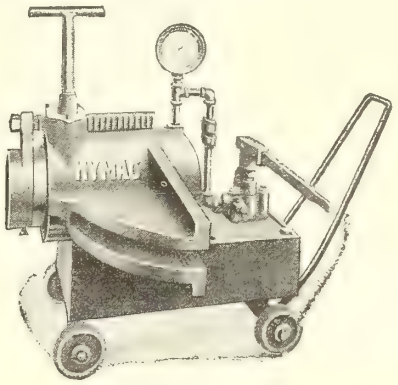
W

Wallace, John H. & Co., Ltd. 22
Wardlaw, T. D. & Son 72
Walmsley, Charles & Co., Ltd. .. 14-15
Warren, Kenneth L. 22
Warwick Woollen Mills, Ltd. 28
Watford Engineering Works, Ltd. ..
Waterous Engine Works 90
Wayagamack Pulp and Paper Co., Limited .. ..
Weir, G. & J. (Canada) Ltd. 16
Westbye, P. P. .. ..
White, W. H. 23
Whyte, William 28
Wilson Patterson Co., Ltd. 74
Wood Pulp Trading Co., ,Ltd. 68

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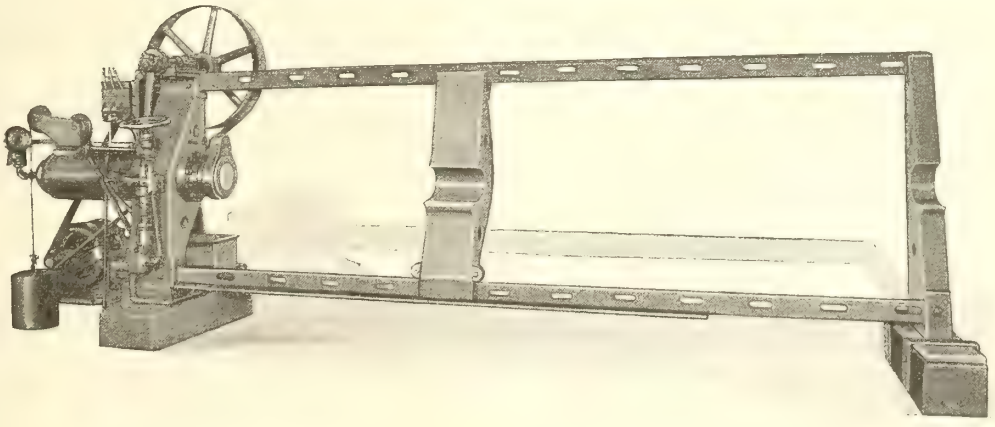
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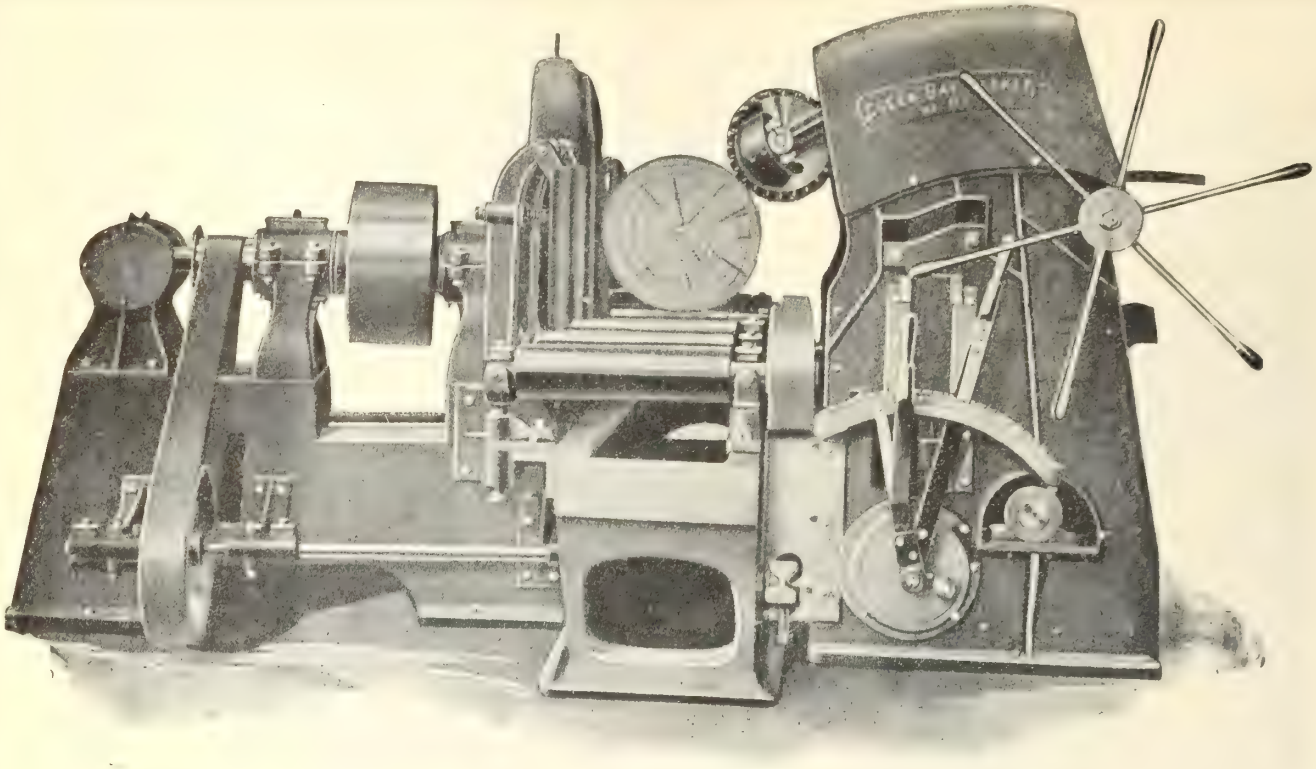
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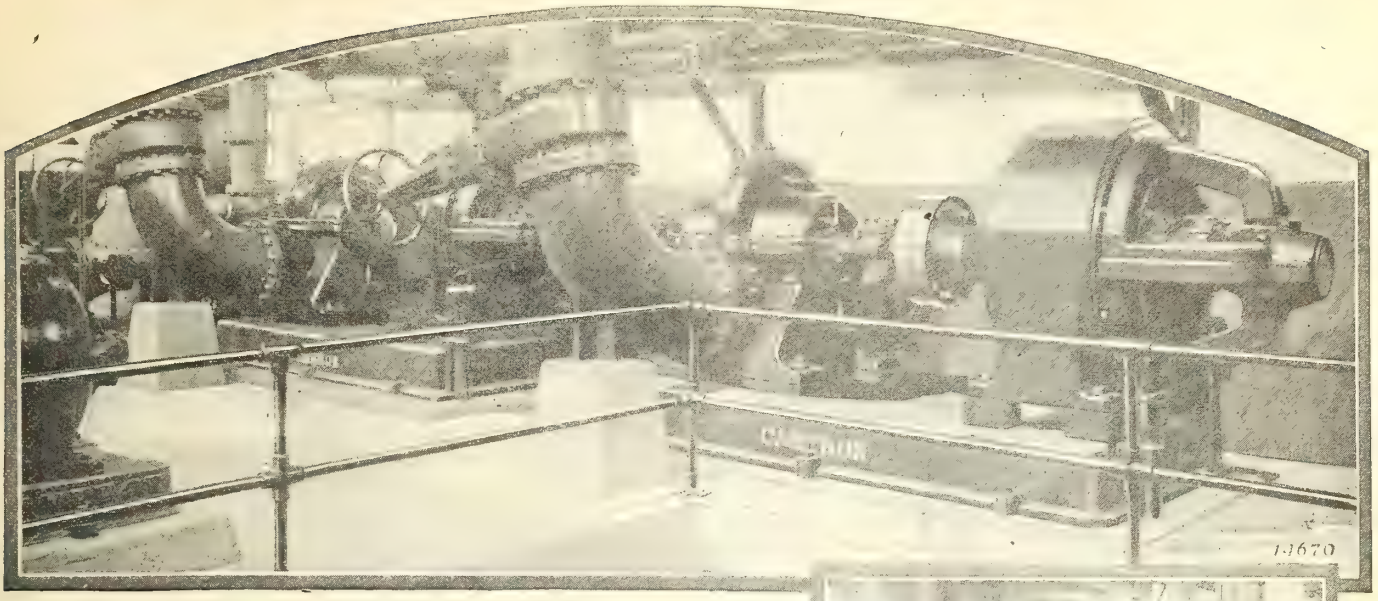
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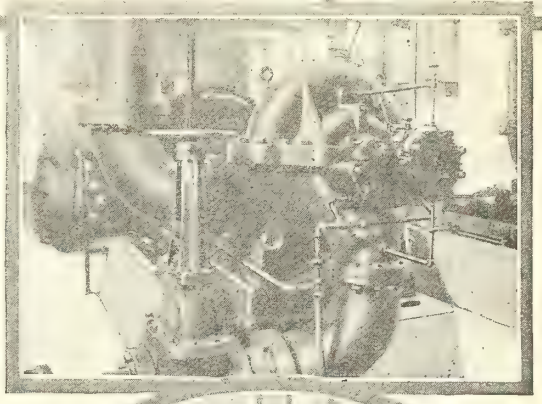
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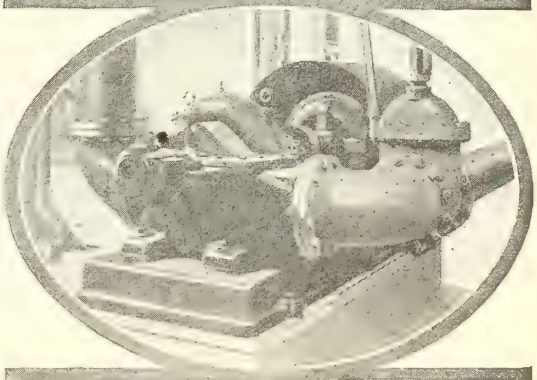
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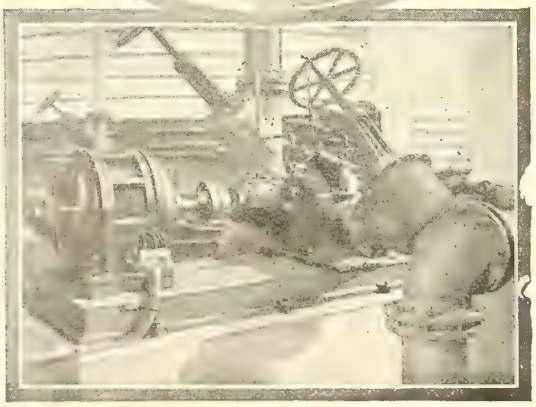
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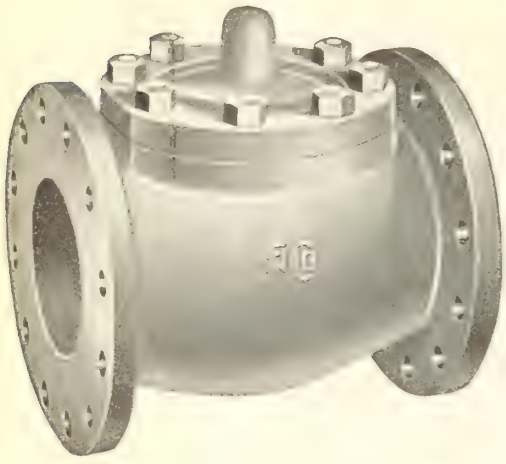
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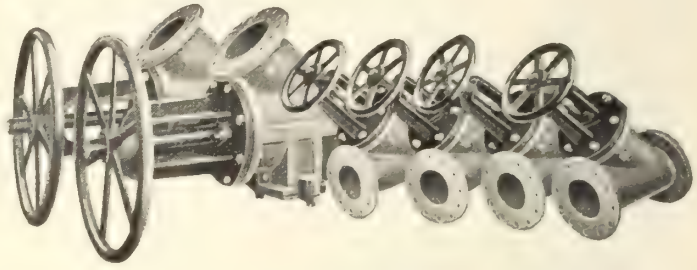
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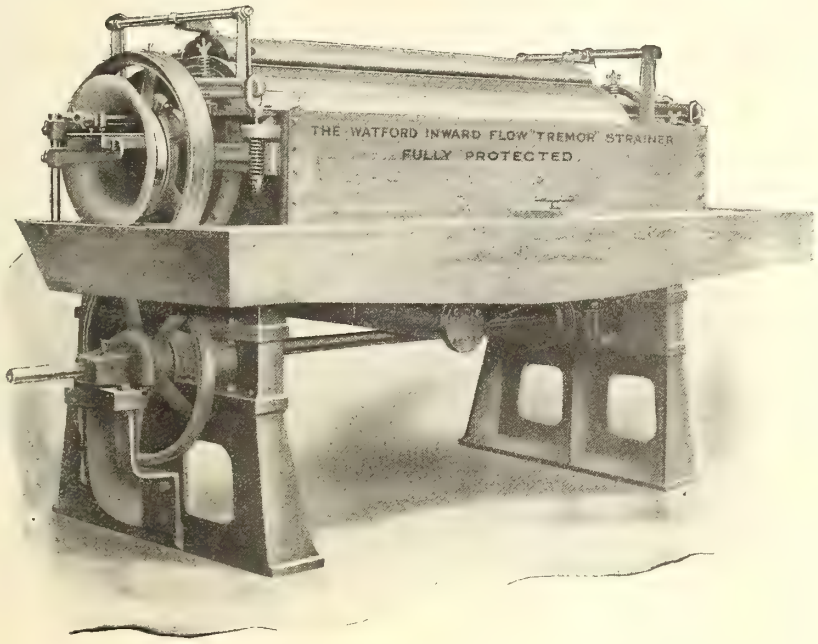
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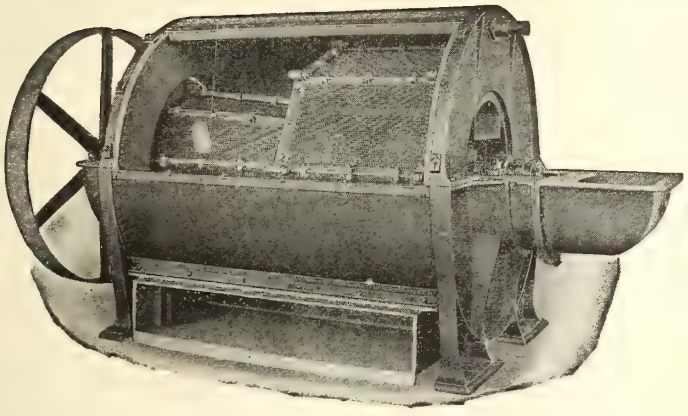
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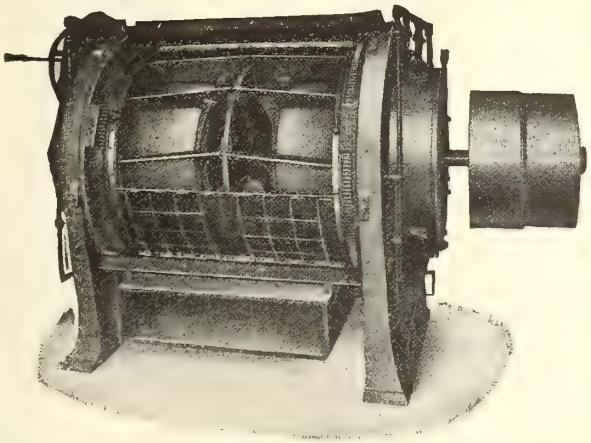


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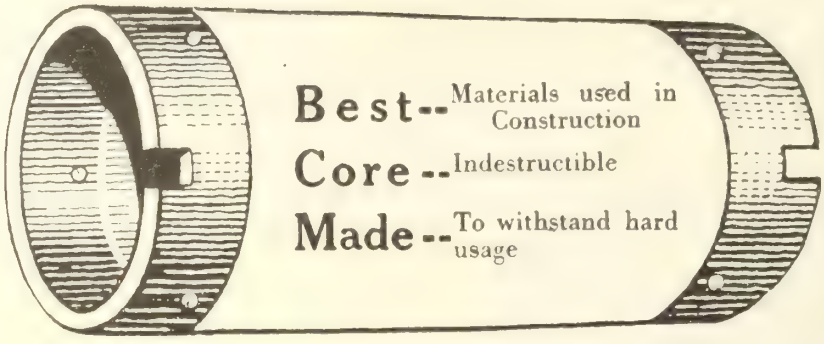
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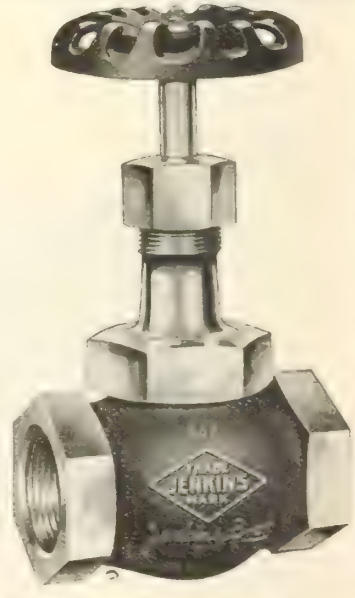


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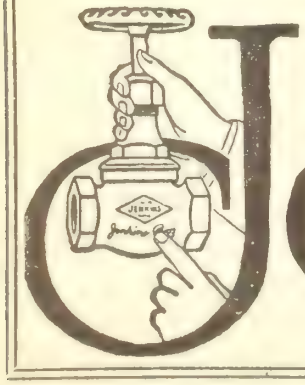
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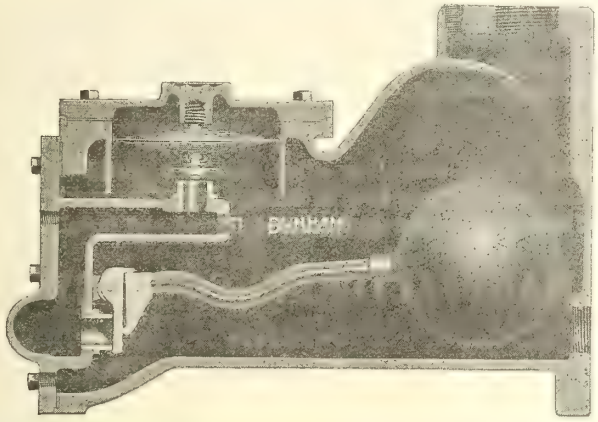
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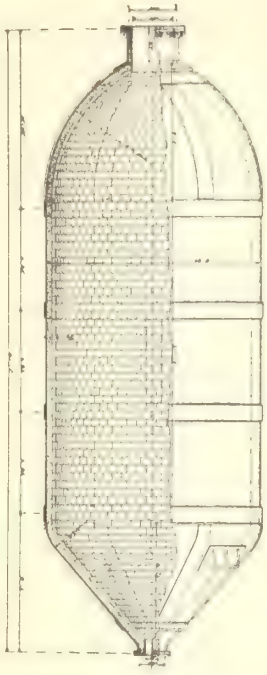
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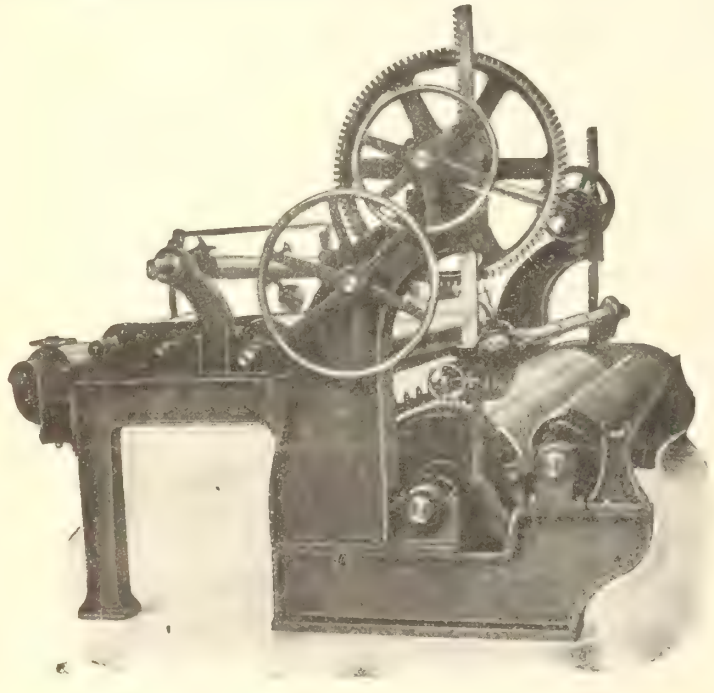
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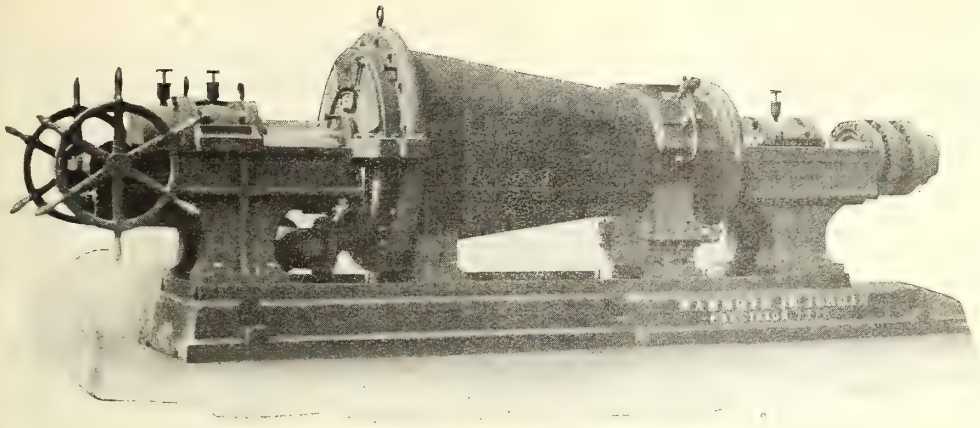
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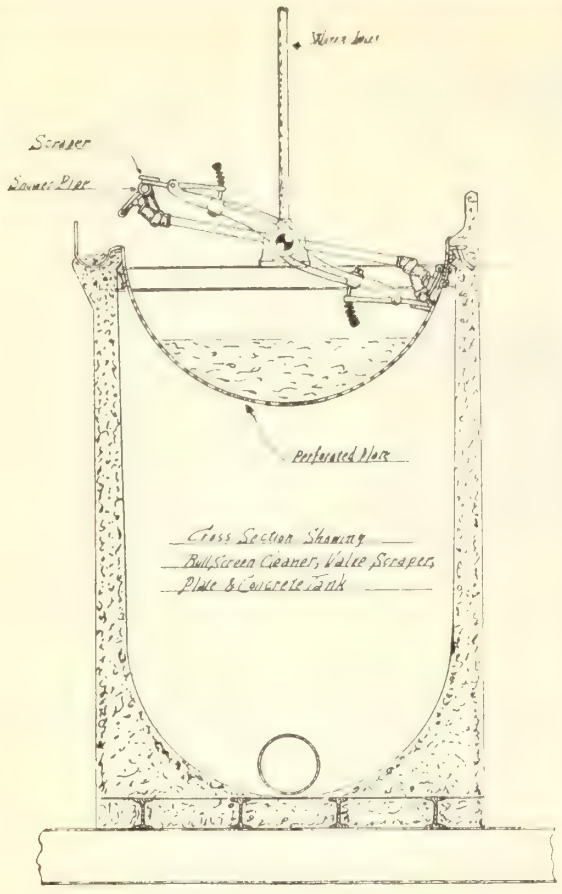
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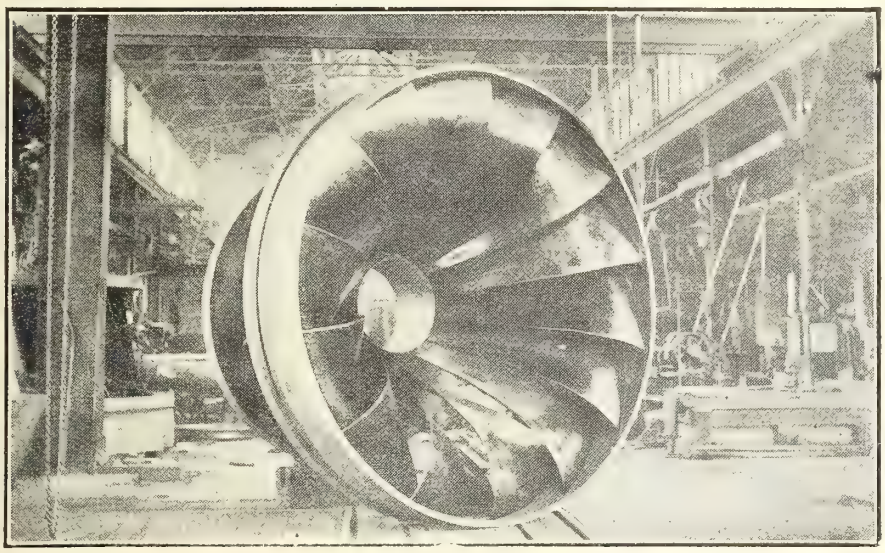
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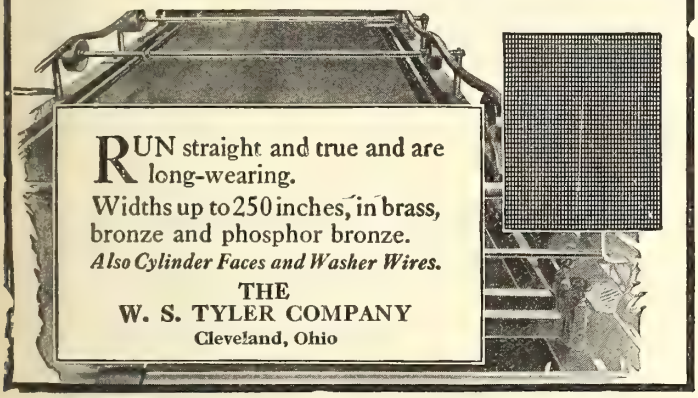
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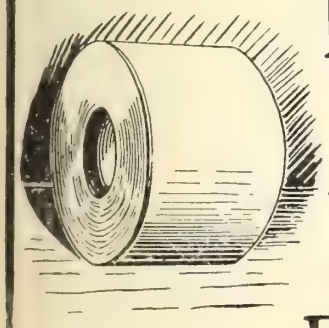




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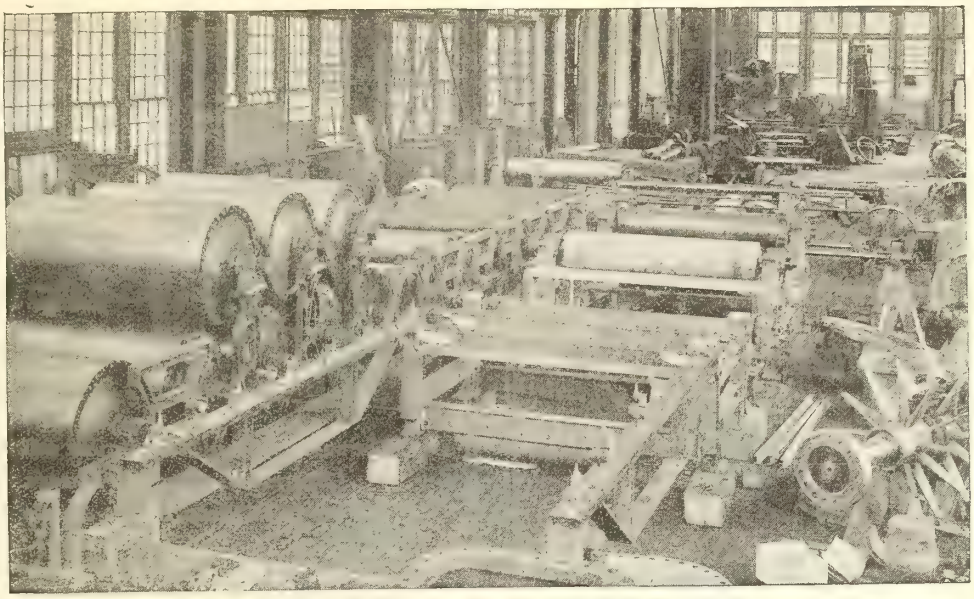
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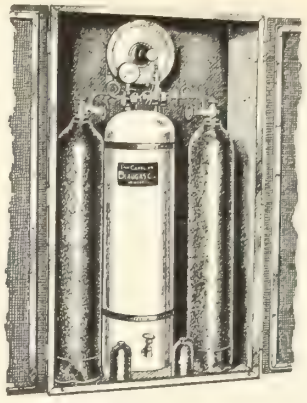
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VOL. XXI. Gardenvale Que., May 31st., 1923 No. 22

TABLE OF CONTENTS

Editoral:

The newsprint price 545
Cumbersome tax collection 545

Special Articles:

Insurance of pulp and paper mills 547
A study in black and white 550
The outlook for the pulp and paper industry 552
Capitalize other men's brains 553

News of the Industry:

Exports of pulp and paper in April 549
Special fast freight for newsprint 554
No export tax on newsprint contemplated 557
Plan for summer meeting 559
Big increase in exports 560
Technical Association plans for 1923 560
Pulp and paper news 561
Belgo-Canadian reorganization 561
Paper Club officers re-elected 561
Electrifying New Brunswick 562
United States notes 563

The Woodlands:

A serious forest situation 555
Americans anxious over possible tax on pulpwood 555
The fire ranger seeks co-operation 555
Forestry abstracts 556

Miscellaneous Information:

Special course of study for pulp and paper workers 557
Trouble with wire seam 557
Review of recent literature 558

The Markets:

Canadian trade conditions 564
New York markets 565

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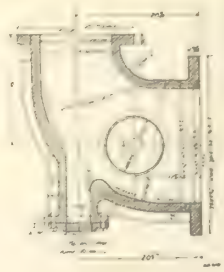
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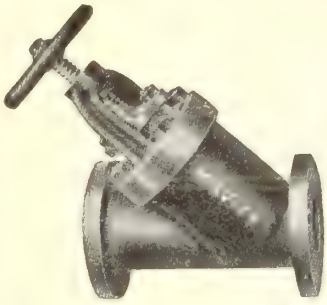
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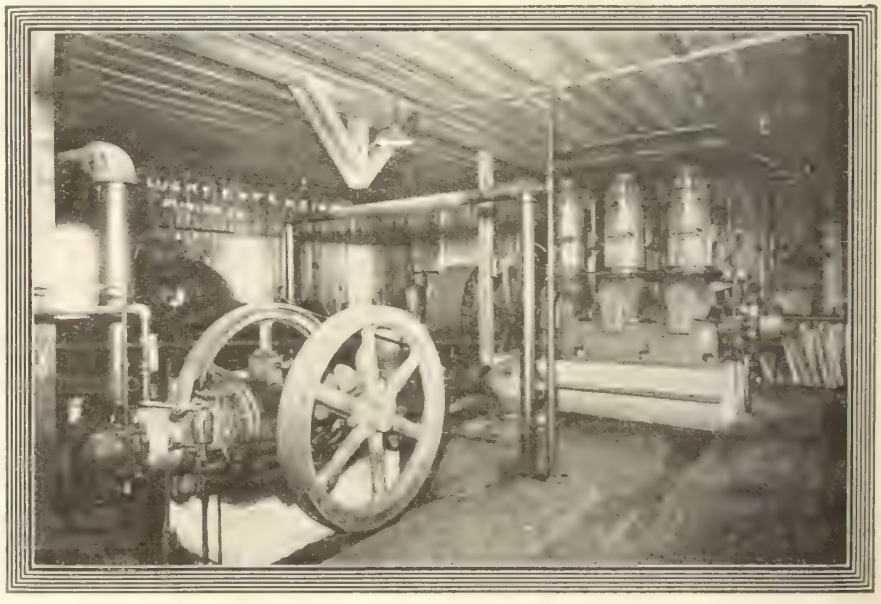
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EDITORIAL

THE NEWSPRINT PRICE

Since the first of the year there has been quite a wide-spread feeling that for the second half of 1923 the contract price on newsprint might be advanced to $80 per ton. There have been a number of factors which support this view, among them the recent advance in wages and the increasing cost of manufacture. It was quite a surprise to the trade, therefore, when the announcement was made the other day that the International Paper Company would maintain the present price of $75 for contract agreements throughout the current year. On the face of it, this will seem to a good many people like throwing away a chance of gathering $5 a ton more than is coming in at the present time, but the Management of the International Paper Company is more farsighted than to see only the immediate benefit of such a step as a great many expected would be taken at this time. It is quite evident that, when prices reach a certain point, there is a critical position beyond which if the price is pushed there will be a decrease in consumption. Certain operating costs have to be met any way, and, once they are covered, increased production means more than a decreased production at a higher rate. The increase in production further has the beneficial psychological effect of keeping a larger number of people employed, and in this way it has a valuable social influence.

In spite of certain increased items of cost it is known that many mills are now enjoying a greater production per employee than has been the case for a number of years. It is not likely that the recent increase in wages which was arrived at in a most amicable manner will have the effect of decreasing individual effort. No doubt this factor was one having a considerable influence on the decision to maintain the current prices of newsprint throughout the second half of this year.

We feel that the Management of the International Paper Company is open to congratulations for their stand on this matter at this time. There has been a tendency growing for a number of months past to increase prices on a great many commodities, and among these are some of the basic commodities required by our people. If every manufacturer takes every opportunity that comes to him to add a little to his price, there will be no end to the process, but in the determined stand of an influential company in an exceedingly important industry — particularly if the lead is followed by similar action on the part of other large manufacturers — we are likely to see not only a general flattening out of the curve for commodities immediately connected with the pulp and paper industry, but also a very helpful and healthful reflex action on other general commodities and services. It must be perfectly evident to every employee in a paper mill that, if his wages increase, and if the cost of the raw materials that he manufactures into the finished product increase in price, and the manufacturer keeps his selling price at the same figure, there will be less profit to the manufacturer, and consequently a less reserve to carry over hard times, for carrying inventories of materials, for paying insurance premiums, maintaining healthful conditions, building cottages and the like; and, being a sensible and observing individual, the employee in the pulp or paper mill will see to it that he gives his best effort to the maintaining of production at a maximum amount. It is only by the most cordial coöperation in this way between employers and employees that the industry can be maintained on a profitable and progressive basis.

CUMBERSOME TAX COLLECTION

Under the new tariff, certain changes have been made in the Sales Tax which affect the pulp and paper industry, in common with other branches of commerce. Not only has the tax been increased to 6 per cent, but an alteration had been made in the method of collection, the object being to tax the finished article rather than the raw materials. It is provided that a manufacturer or producer who produces goods to the value of $10,000 or more, during any fiscal year, shall take out an annual license, but the Minister may direct that a manufacturer or producer, who does not manufacture or produce goods to the value of ten thousand dollars a year, and who uses a substantial portion of goods which are exempt from the tax in the manufacture of goods which are liable to the tax, shall take out a license and shall be subject to the same conditions as the licensed manufacturer or producer. The wholesaler or jobber who sells not less than 30 per cent. of his total sales of goods to a licensed manufacturer or producer to be used in articles to be produced for sale, may take out an annual license. The tax is payable by a licensed wholesaler or jobber at the time of the sale by him to other than a licensed manufacturer or producer of goods.

The question arises as to how this scheme is to be

applied in the case of products such as pulp and paper for conversion purposes, boards, and other products, which are passed along by the original producer to another manufacturer for conversion into a finished article. It is clear that what is a finished article for one section of the pulp and paper industry, is the raw material for another, and on the face of it, it looks as if the scheme will lead to considerable confusion.

It is understood that the Finance and Customs departments are now making regulations which may straighten out this matter, the idea being that the last licensed manufacturer who handles the commodities for the purpose of making the finished article, will be responsible for the tax. The mills will only be chargeable with the tax in cases where they sell direct to the consumer or to unlicensed manufacturers. A licensed jobber or wholesaler who sells to an unlicensed manufacturer will pay the tax, incorporating this into the price of his goods. The licensed manufacturer or jobber who handles the goods last will pay, no matter how many hands the goods may pass through. This will probably involve a considerable amount of bookkeeping, and add to the expense of doing business. Taxes of this character are regarded by many as likely to hamper business, as likely to cause considerable delay, and as vexations in their nature. Of course, the money has to be raised, but the new scheme concerning the Sales Tax appears to be very cumbersome and unsatisfactory, especially from the collection point of view.

The Dominion — wide protests against the new method of collecting the Sales Tax is evidence of the dissatisfaction with the proposed regulations. Practically every industry will be affected by the plan, which, judging from its complicated character, has been evolved by men who have no practical knowledge of business, and apparently have not calculated how such a scheme will work.

It looks, indeed, as if the advisers of Mr. Fielding have set up a plan which will give the maximum amount of trouble to Canadian industries. Many men, who have clearly studied the new form of taxation, are of the opinion that it opens the way to evasion, and that the honest manufacturer who pays the tax will thus be handicapped when it comes to competition.

The tax will not affect all industries alike, because they are different in their nature, and in their methods of doing business, and some will be more seriously hit than others. Mr. Fielding has already made some changes; for instance, the tax will not be operative until January 1, 1924, instead of August 1 next, and there has also been an alteration in the clause affecting jobbers' licences. The list of articles subject to tax has been amended, so as to make the tax apply to job printed matter produced and sold by printers or firms, whose sales of job printing do not exceed ten thousand dollars, per annum.

Newsprint, which was exempted has been included in the articles liable to the tax. It was explained by Mr. Fielding that the exemption was due to an error, so that the whole of the paper industry is now liable.

Taxes of this character, which interfere with trade, are very unsatisfactory forms of raising revenue, in that they are costly to collect, involve a great deal of book-keeping, a large amount of trouble, and generally are very undesirable. No one likes taxes of any description, but as they are inevitable, the more simple the form, the better for everyone concerned. — F. H. D.

COBWEBS

The statement that Canadian railways will run special newsprint trains is evidence of the desire of the managements to render adequate service to Canadian industry as well as being an indication of the growing conception on the part of the public of the important place that the pulp and paper industry holds. A number of speed records have been established on special occasions and by special routing and rushing. It is now probable that newsprint made Friday morning in any mill in Ontario or Quebec will be in the customer's press room or warehouse in New York, Boston, Chicago, Philadelphia, Cleveland, Detroit, etc., on Monday. If this service can be maintained, it will mean an enormous saving to the newspaper publishers. Few people realize the cost of warehouse rent and the carrying charges on large stocks of paper valued at $75 a ton. To cut these stocks from four or even two weeks' supply to enough for one week is a very important factor in economical production. The only other reason now for carrying a stock of paper is fear of labor trouble, and, we feel sure, the danger of any serious disruption of this sort is becoming more and more improbable.

Rumors still persist, or perhaps they are cultivated and continue to bloom, about Montreal to the effect that there is likely to be an amalgamation of pulp and paper mills in the St. Maurice Valley. It is some time since there has been an amalgamation of paper mills. The most recent and important examples have been the organization of the Spanish River Pulp & Paper Mills, as it is today, the Provincial Paper Mills Limited, and the Howard Smith Paper Mills Limited. There are a number of obvious advantages in a large organization, and certain cost factors can usually be lowered. On the other hand, the principal disadvantage seems to be that, coincident with practically every amalgamation, there is issued a larger amount of securities than was covered by the original enterprises, and consequently a considerably larger margin of profits is generally required to maintain dividends on new issues.

Insurance of Pulp and Paper Mills

Extracts from a speech by J. D. Erskine, The Northern Assurance Company of London.

As we are interested in the subject of paper making mainly from a fire insurance viewpoint, and only to the extent that we may obtain information on this subject which we can use in our business of underwriting, I shall not attempt to give here the history of paper making. It is sufficient to say that cotton, hemp and linen rags were practically the only materials, used in paper making until 1840 when a German determined that the fibre of wood pulp could be advantageously used. Today, wood is the most important ingredient in paper making. It is a fair estimate to say that 90 per cent of the paper manufactured is made of wood, principally of spruce and hemlock.

The United States is the largest consumer of newsprint in the world and also the greatest producer, although in this latter respect closely pressed by Canada. So prodigal has been our use, so wasteful our methods and so neglected our practice of reforestation that it is only a matter of a few years before Canada will have passed us in the production of wood pulp. I recently saw the statement that in the past ten years the production of news print in Canada had more than trebled, whereas, only two new mills had been established in the United States. Although this country now imports large quantities of wood pulp from Canada and Scandinavian countries, it is apparent that the future of the mills already established in this country depends upon the success attending our efforts in reforestation in the immediate areas of those mills. We have exploited our resources in the East, where our mills are now largely centralized, and must now look to the West, the South and to Alaska for our supply. It is likely that now new mills will be established in those regions, and it follows that the East will be less a factor in the future development of the business. Already we have noticed that some of our eastern mills have shut down indefinitely, and an idle mill with an uncertain future deserves the careful consideration of the Underwriter.

Our subject will be more interesting if you can visualize a typical risk. The large mills are usually located on rivers affording water power. The mill consists of a close group of buildings, generally of mixed brick, frame, and concrete construction, varying in height from one to four stories. Although the majority of the buildings in the group will not exceed one or two stories in height, the digester building and acid towers are usually the equivalent of three or four stories in height, and are, together with the pulp wood piles, the conspicuous features of the group. The risks are usually sectional, but it is not uncommon to find numerous communications between sections. In good risks, these openings, whether doors or windows or belt openings, ar so far as possible, protected by standard fire doors and shutters.

The small paper mills, of which we find many, differ in general from the large mills in that the small mill is usually a one section risk, and as a rule has no pulp mill in connection with it, but uses as raw stock pulp prepared elsewhere together with old paper and rags. As unsprinklered propositions these risks are not attractive. If they are country risks, as they often are, their degree of private protection is scant. The buildings are not apt to be kept in good repair; the buildings, themselves, are old and show their age. There are, of course, unsprinkled and unprotected small paper mills which, because of good management or good construction are fair risks, but in this class good management seems rather the exception and management is always an important factor in determining the acceptability of a fire risk.

In this class of risk, management and administration are of great importance. The large mills are very often country risks. The employees housed in tenant dwellings form a small community dependent upon themselves for fire protection. It is important that the superintendent and foreman be practical engineers and mechanics competent to supervise the yard hydrant system and to make emergency repairs throughout the plant. There is no class of risk which more than the paper mill needs careful supervision. The entire water system, embracing engines, pumps, standpipes and hydrants must be carefully supervised by local plant engineers and the bureau inspectors. If a sprinkler system is installed, and probably the majority of the large plants are now equipped with sprinklers, the bureaus provide inspection service. The dampness which prevails in certain sections of the plant, tends to corrode the heads and piping so that constant care must be given to see that corroded heads are replaced by new heads wax coated and that corroded piping is replaced by new piping treated with rust proof paint. The dry valves controlling the dry piping in unheated sections of the plant require inspection.

The storage of pulp wood should here be considered. Pulp wood is an important subject of insurance as values at some locations run as high as $500,000. Furthermore the piles are sometimes located so near mill buildings as to constitute a serious exposure. The logs are cut in lengths of 2′ to 4′ and are usually rough stacked in conical piles sometimes 50′ or 60′ even 100′ high. For convenience in handling, the pulp wood is stored near the grinding mill but it is obviously good practice to provide a clearance of not less than 100′ from any important building and even a larger clearance if the piles are high. The individual piles may average from 5,000 to 20,000 cords and ample clearance should be maintained between piles. Large yards which are well administered have flood lights and search lamps and good watchman service. Frequent rounds are made, and the watchmen ring boxes

or telephone to a central station. Protection should be afforded by hydrants on a loop of large main and we frequently find monitor nozzles on high platforms close to the piles, and sometimes mounted on the piles themselves. These nozzles swing on a fixed pivot, an arrangement similar to the lawn sprinkler, and the logs are wet down every day during dry weather. It is so difficult to check a fire well under headway in wood piles that the prevention of fire is a matter of importance. The hazards to be guarded against are smoking on the premises, fire caused by defective electrical equipment in connection with the log conveying apparatus and sparks from railway engines. Of course, scrupulous cleanliness should be observed in the yard to obviate the possibility of an accumulation of bark or refuse.

In a discussion of the hazards of paper mills we should first consider the common hazards of light, heat, and power, which, as perhaps is the case in all classes of risks, are the most frequent causes of fire. Even in such risks as chemical plants we find that common hazards are responsible for more fires than are the special hazards. The special hazards are usually well guarded because they are recognized and appreciated whereas the heating apparatus and the lighting equipment are neglected for no other reason than that they are common and usual hazards. And this seems to apply particularly to paper mills. I have noted in the reports that a recommendation pertaining to defective electrical equipment is found frequently. A possible explanation is that the electrical work is often done under the supervision of the plant engineer who may not be competent to do the work which really requires an electrical contractor familiar with the standards of the electrical code. In the old mills it requires a complete overhaul of the wiring or a new installation to bring the wiring up to standard.

The steam plant is an important point because a suspension of its operations may cause a complete shut down of the plant. The best arrangement, of course, is to have a detached boiler house of fire resistive construction. Lacking such ideal arrangement it is at least possible to effect a standard cut-off between a frame or brick boiler house and the main plant. Whatever the nature of the power, and it is not unusual to find a combination of steam, water and electricity, there is extensive shafting which must be kept in alignment. Bearings, often in inaccessible places, must be well oiled. A competent engineer or superintendent will care for these matters.

Generally speaking the special hazards are not severe. Among the chemicals handled are lime, sulphur and resin. None of these are liable to spontaneous combustion and it is satisfactory if they are stored separately in cool dry places.

The sulphur burning process in the sulphite mill should be in a fire resistive section cut off. Furnaces used in connection with liquor recovery in the pulp mills present only the usual furnace hazards which mean that ample clearance should be maintained from all combustible material.

In the various steamheated processes, such as digesting, size heating, wax melting and the like, no particular hazard is involved and it is only necessary to see that the steam piping is kept free from wood. The pipe should be supported and bushed where passing through wood floors or partitions.

In the storage of stock, both raw and finished, it is essential to observe care as to cleanliness. Rags are stored either in warehouses or in the mill yard. Fire once started in the bales is exceedingly difficult to stop. With rags, and particularly with cheap stock, we encounter the marked hazard of spontaneous combustion. In the preparation of rags, their sorting, dusting, and cutting, we have a dust hazard and a marked hazard in the possibility of foreign materials striking a spark in the cutting and picking processes. It is proper to handle all rags in a separate section, fire resistive if possible, but in any event securely cut off. It is needless to say that the rag hazard is much reduced if sprinkler protection is afforded. The dust hazard can be minimized by providing dust collectors.

Where old paper is used for stock, as it is in some mills, especially book mills, the paper warehouse should be detached.

In the paper machine process there is very little hazard. Torn paper accumulates under the machine and at the cutters; this should be cleaned up and removed. It is quite possible that the dust given off at the cutters affords a dust explosion hazard which can be guarded against by adequate ventilators over the machine.

In the barking, log cutting, and chipping processes incidental to the making of pulp there are the usual hazards of handling wood and in addition the hazard severe in my opinion, of wood dust. Wood dust in a proper mixture of air, is ignitible or explosive, the precautions to be observed are cleanliness and ventilation. The rooms where this dust is prevalent should be cleaned up at least once a day and fans should remove the dust as it is created to prevent its dissemination throughout the building. Care should be exercised to keep the bearings of motors, fans and fast revolving machines clean of dust as over heated bearings are a constant hazard throughout the plant. In the chipper room and in the chip loft there is the marked hazard of handling enormous quantities of wood. These rooms should be fire resistive in construction and equipped with short hose lines so that an incipient fire may be controlled.

Before conclusion let us briefly consider the underwriting factors involved in use and occupancy insurance. The mills operate throughout the year except as they are effected by low water or by labor trouble. Raw stock can be obtained in the market without difficulty, although if pulp had to be carried by rail from any considerable distance it is possible that railroad trouble might be unexpectedly encountered. The large mills as a rule store their pulp and pulp wood in detached piles so that the burning of one pile would not cause a suspension of operations. Processes are not ordinarily duplicate and while the different processes in a well arranged mill are conducted in separate sections well cut off, it is quite possible that the shut down of any one section will materially affect the whole output. The steam plant is an *important* factor but fortunately serious fires in well arranged boiler rooms are not frequent.

The machinery is domestic and not easily susceptible to damage from small fires. The paper machine would require a long time to replace, and damage to it would instantly affect the output, although the pulp department could continue to operate. While it is quite possible that a small fire in a mill could

cripple the entire plant, the shut down period would probably be short. The large mills keep parts and supplies on hand and have in their employ competent mechanics. Unless the paper machine is affected the shut down would not be serious or long. We should bear in mind that the power and the special processes are exposed only to moderate hazards. It is always desirable to have a possible outside source of electricity even though electricity be generated on the premises, and this condition usually obtains except where the mill is a remote country risk.

Of a modern mill, well located in respect to obtaining its supply of pulp or pulp wood, it is safe to say that it yields a fair profit to its operators who would exercise diligence and haste in placing the mill in operative condition after a fire, even though they were enjoying the protection of use and occupancy insurance.

It is usual to find the managers and superintendents of the large mills keenly interested in fire preventative measures and the competent engineer, who offers feasible recommendations for improvement of the risk, may reasonably expect that his suggestions will receive favorable consideration.

Exports of Pulp and Paper in April

The following review of Canada's pulp and paper exports is prepared by the statistical department of the Canadian Pulp & Paper Association from figures issued by the Department of Trade & Commerce, Ottawa.

Unless otherwise stated, figures are in short tons.

NEWSPRINT:

To:	April 1923	April 1922	Four Months 1923	Four Months 1922
United Kingdom	—	819	29	3,520
Cuba	—	51	—	203
Jamaica	—	—	129	109
Argentina	—	498	—	1,133
Mexico	—	—	—	69
Uruguay	—	—	—	92
Other Latin America	73	45	270	110
British S. Africa	368	1,024	1,394	2,426
Australia	—	2,739	5,163	11,085
New Zealand	984	878	3,673	3,484
U. S. A.	76,854	55,396	348,182	272,747
All Other	99	12	172	100
	78,378	61,462	359,012	295,078

Exports in April were much smaller than in March when the amount was 113,450 tons.

For the first four months of the year, exports were greater than last year by 63,934 tons or nearly 22 per cent.

Exports to U. S. A. in this period increased by 75,435 tons.

Exports to Australia were less than 50 per cent of last year's figures.

MECHANICAL PULP:

To:	1923	1922	1923	1922
U. S. A.	11,774	6,448	64,540	51,638
U. Kingdom	2,225	—	15,349	14,222
France	1,993	—	1,993	1,943
Belgium	—	—	—	—
	15,992	6,448	81,882	67,803

SULPHITE:

(a) *Bleached:*

U. S. A.	10,225	6,046	50,064	36,174
Japan	501	2,000	4,117	2,898
All Other	121	103	121	104
	10,847	8,149	54,302	39,176

(b) *Unbleached:*

	April		Four Months	
U. S. A.	11,983	7,148	55,606	35,411
U. Kingdom	1,788	—	2,910	1,581
Japan	516	1,169	3,591	5,564
France	1,100	—	4,038	2,014
All Other	—	—	—	—
	15,387	8,317	66,145	44,570

SULPHATE (KRAFT) PULP:

	1923	1922	1923	1922
U. S. A.	9,605	8,162	44,993	43,821
Japan	—	—	—	—
	9,605	8,162	44,993	43,821

WRAPPING PAPER (KRAFT):

U. Kingdom	322	41	2,501	1,676
South Africa	378	181	729	371
Australia	103	75	1,351	896
New Zealand	21	40	583	367
Japan	593	300	1,312	1,695
U. S. A.	—	—	—	—
All Others	12	—	65	60
	1,429	637	6,646	5,065

	1923 lbs.	1922 lbs.	1923 lbs.	1922 lbs.
BOOK PAPER:				
To:				
U. Kingdom		—	2,000	—
S. Africa	—	—	—	—
Australia	199,200	2,800	1,165,700	47,200
New Zealand	—	—	313,600	66,500
Japan	20,000	—	20,000	—
All Others	4,400	700	47,000	21,400
	223,600	3,500	1,548,300	135,100
BOND & WRITING:				
U. Kingdom	14,300	—	64,900	—
S. Africa	2,300	22,600	6,100	32,700
Australia	104,400	13,000	382,900	20,900
New Zealand	15,400	5,600	59,800	9,000
West Indies	—	2,800	4,400	5,700
U. S. A.	—	9,700	20,200	26,000
India	—	—	81,200	—
Japan	46,200	—	234,100	—
All Other	26,900	2,600	44,900	29,900
	209,500	56,300	898,500	124,200

A Study In Black And White

By FRED BROWN, Fort Frances, Ont.

I am calling again the attention of the public to the fact, that Canada has lost during the last 7 decades 916 million of acres of forests. Part of this 916 million of acres of forest consisted in virgin forest, part of it in second growth, some of this stupendous amount of acreage has been burned over once, some of it twice some has been visited by the Fire Demon as often as 8 times. 95% of all Forest fires are caused by human carelessness. To keep fires out of a forest country is not easy, but after all it is easy enough, simple enough, we **must** at all costs prevent them, if possible, from getting started. This requires primarily a lot of sound publicity, and secondarily, just a little better enforcement of the Law. Law enforcement itself is good publicity. Why? Because the novelty of law enforcement would create a big surprise to the parties most interested in the starting of a fire, and this interest would create more interest, so to speak.

Repeat fires are even more dangerous for the public at large and the Dominion and the Province in which they occur, than original primary fires, for the reason that repeat fires are the fires that do more damage than is realized at first calculation. The most simple farmer in the country knows that the richer the land or soil is in humus, in nitrogen and organic matter and etc. the better the chances for a bumper harvest. Unfortunately for agriculture most of the land is limited as to the content of nitrogen, humus, and organic matter, but forest soil in its natural state is not thus limited. Every summer however, fire that runs through the forest just takes a little more humus and organic matter, so that after 3 or 4 fires occurring on the same land the fertility is completely burned out and you have on hand a stretch of land just about as productive as the desert of Sahara.

Canada as a whole, and every Province from Nova Scotia to British Columbia are acquiring a part of the 916 million acres of desert, if the people, the legitimate owners of the forests do not wake up and bestir themselves. What do you suppose our North country is worth in dollars and cents, as a playground to rest in, to hunt in, to fish in, and for general recreation purposes? Who will take chances to pitch his tent in the greens of Northern Ontario, or Northern Quebec, or any other province, and take the risk to find his tent burned up, his hunting ground burned over, his fishing gone, gone with the stream that once supplied the nearby towns and cities with wholesome drinking water. Fur bearing animals will migrate further north, where woods are reasonably fool and boob-proof. Ducks and geese will breed and rear their young further North and not even a coyote will remain to howl his mournful song to the moon. Who will pitch his tent amongst a mess of scraggy brush, blackened stumps, ashes and cinders and smoke? How much would our National Railroads gain in Tourist traffic, how much would be spent in Automobile traffic how much would come into this fair Dominion of ours? We have the greatest asset in the world to create a Tourist traffic second to none on the North American continent, and yet we are lacking in sufficient appreciation to take proper care of this wonderful asset.

Efficient fire protection has been attained with an annual expenditure of one-half cent an acre. Five cents an acre a year as a tax, to be used in forest protection and fire prevention would have given us during the past seventy years on the 916 million acres of burned over forest land about forty-five million dollars. Could we have protected our forests more efficiently on this sum? Could we not even have replanted some waste lands. I wonder!

While we do spend a lot of money on fighting forest fires, I go on record as saying that we never have had adequate fire protection. Purposely I alluded to the Tourist Bill first, but I cannot pass from this without saying a few words about the gallant fight Spruce and Pines are making to get a footing for a second growth. After the first fire sweeps through a forest, the Pines and Spruce are trying to get back and with half a fair chance a lot of our burned-over country would get back into pulp and log timber in a relatively short time. Along comes a second fire and wipes out the fairly well established second growth, takes along, for a good measure, a few thousand dollars worth of humus and nitrogen forming organic matter and later birch or jackpine trees arise to cover up the depravity of fools and boobs who started the fires and try to cover, alas! not to much purpose, nature's nakedness. To be sure, the sight of straggling jackpines in clusters with large bare spaces between the growing dwarfs with rank weeds and brushes interspersed is not an inspiring sight, and lo! and behold on a fine day in early spring summer or fall, along comes another fire, takes the last remnant of jackpine, grass, brush, humus, organic matter and all and deforms what was once a piece of God's wonderful creation into a barren desolate desert; a crying shame and menace to civilization. A few more years will turn the trick. After two or three years the effects of the denudedness from the covering forest will be noticeable. The surface of the country will become eroded; spring thaws and spring freshets will wash off the unproductive ground and will spread over lower lying fertile fields; streams will become roaring torrents in the spring and after heavy showers, and in summer they will dry up; the farmer on lower lying land, tired of this everlasting gratuitous increase of unproductive soil, gets worn out in the unequal fight between man and nature and abandons his farm and home, soured in mind, broken in spirit—one more recruit in the ranks of the defamers and malcontents.

Having shown how easy it is to deprive the business man of a **real** vacation in the woods, and by a real vacation I mean a vacation when the tired business

man can rough it to his heart's content and not a summer hotel, a few feet back of a dusty highway, where a lot of college girls dance on the front piazza, a lot of young fops in white flannel pants and canvas shoes swing a tennis racquet on the front steps.

Having also shown how to go about to create abandoned farms and turn their former owners into a floating population, it remains for me to give you a few more facts concerning the future.

In the same ratio as the available timber supply and pulpwood supply in the Republic to the south of us decreases, the stumpage value of timber and pulpwood increases in Canada. This is the law of supply and demand. The Eastern States getting lumber from the Pacific coast pay about as much for freight as for the lumber itself. Good business for the railroads, someone says, but I can assure you, a mighty poor business for the newlyweds, who start out in life and want to build their own nest. All over America we have heard the cry of house shortage and we all are more or less familiar with the results. Everybody is familiar with the rent-boosting, the selling of inferior habitations at exorbitant prices, and the extreme uncertainty of tenure. But what the mass of people do not concede is the fact, that this very same house shortage is responsible for unemployment, illness amongst industrial workers, and a genuine hindrance of real prosperity; the very fact, that the owners of the industries were not able to build adequate houses for their employees, got them at the mercy of the inefficient and the floater.

Perhaps, when the price of inferior lumber rises to $100.00 per 1,000 board feet, and newsprint to about 10 c. a pound the matter of forest protection from fires may receive some attention. Perhaps not! the public is in the same position as the coin flapper with his "Heads I win and tails you lose". The public always loses and must foot the bills. The public must pay for the cost of the world's war with increased taxation and for everything that goes to make life worth living. The raising of pulpwood and saw timber either by natural seed regeneration or by artificial planting is a long time job; that no amount of urgency, no amount of care, and nursing and no amount of capital can hurry to the age of harvest. What happens between acts, so to speak?

We are using about six times as much wood per year as the annual natural growth increase of our available timber supply is today, barring out destructive fires; so that if we start at once to plant, seed and grow, our supply of pulpwood or saw lumber will be desperately low and far away from the markets. Our supply will be far lower than any government estimate "ever will" put it. Right here I go on record to say, that the government's estimates are from 12 to 18 months behind the amount actually used up or destroyed by fire. Thousands of acres will have fallen victims to the fire demon in 1923 and millions of cords of pulpwood and millions of feet of saw timber will be used up in 1923 before the returns of 1922 are available. In fact, before we can realize on a second growth, the people of Canada will be forced to build thousands of miles of railroads to get timber enough from the north to keep going, and bear in mind, that the timber from the far north will be the most expensive article ever put on the market in a civilized country, for two reasons.

Primarily, the timber in the far north is scattered and of an inferior quality, which will make logging operations and manufacturing an exceedingly costly affair.

Secondarily, the transportation charges of the finished product to the centers of consumption will assume gigantic proportions.

Why not shake off that apathy against forest fires, why not insist on a sound forestry policy? This country is governed by the people for the people. Get together and demand from the Government reclamation of the vast idle areas of Ontario, Quebec, New Brunswick and the other Provinces, demand protection for the second growth of timber, demand adequate fire protection and law enforcement. Forget petty politics in the cause of the common weal of Canada.

Demand that a heavy duty be imposed on all unmanufactured pulpwood crossing the line, regardless of original ownership; we may as well reap the benefit of manufacturing our own natural resources in this country into the finished product. During the year 1921 we shipped approximately 1,100,000 cords of pulpwood to the United States at $10.00 a cord. The cost of wood, manufactured into paper of one quality or another brings today on the American market from $50.00 to $75.00. The Dominion of Canada stands a loss of from seventy-five to one hundred and seven million dollars per year; these figures are increasing as the exportation of pulpwood increases. Give your imagination a little leeway and figure what this means in wages lost to Canadian people, therefore lost prosperity; figure out how many new towns of about 2,500 population it means; figure out the lost earnings for our public-owned railroads; figure out how many new freight cars are required to haul supplies to the paper mills and camps, and how many cars it takes to take 1,000,000 tons of paper to the market, and figure out what a saving would accrue to our forests, as by manufacturing the paper here in Canada closer utilization of tops and limbs could be insisted upon.

In conclusion a word of explanation is due to the reader about the term of Forester and Forestry. To be sure, some people have in mind, when thinking of a forester, a landscape gardener of some sort, or a man, who grows trees and shrubs for sale, or a man who looks after the management of a small park for some magnate and a similar erroneous conception. Forestry is nothing more or less than a financial undertaking. It must be made to pay to succeed. The forester looks upon his work as the labor of raising a crop of commercial wood products, lumber, pulpwood, poles, ties, posts, etc. He also knows the value of forest cover to animals' lives, he appreciates the interest of true sportsmen and tourists, he thanks the Almighty for the health and scenic value to the Dominion of productive woods in contrast to barren lands, but when he figures costs, he figures in board feet or cubic feet and cords, he must show financial benefit to the owners, to the investors, and in our case, as the people are the owners of most of our forest wealth, as the people are the investors, he must show the public at large that it pays to raise forests, that it pays to keep what we have got, that it pays most of all to protect what we have left. It is up to the

people to back him up and see him through in his demands for the adoption of a sound forest policy, for adequate fire protection and for law enforcement.

Let our slogan for 1923 be: Less forest fires and more and better protection.

THE OUTLOOK FOR THE PULP AND PAPER INDUSTRY

By J. N. Stephenson, in *Canadian Chemistry and Metallurgy*

There seem to be three principal phases to the Pulp and Paper Industry in Canada: Paper, Pulp, and Pulpwood. In each case we have to consider the present and the probable future condition of the market, as well as the present and prospective production. The United States is by far our largest customer for newsprint paper and wood pulp, and our only customer for pulpwood. While some newsprint goes to other countries, our principal exports to countries other than the United States comprise book, writing and wrapping papers, consigned principally to Australia, New Zealand, Japan, South Africa and Great Britain. About 80 per cent. of our wood pulp exports for the fiscal year ending March, 1923, went to the United States, about half of the balance went to Great Britain, and the rest to other countries.

Newsprint paper is, and will continue to be, our principal item of export. Its value among the exports of the past twelve months represented more than 50 per cent. of the total value, while for the month of March, with the record shipment of 113,450 tons, the proportion was nearly 60 per cent. Most of this went to the United States. The erection of new complete units and the extension of older mills so as to manufacture their former excess production of pulp into paper indicates a growing belief in and appreciation of the value and wisdom of exporting our products in the finished condition. To do so means the more efficient employment of our water powers, capital investment and population, besides greatly improving our economic position relative to other countries; and this point is emphasized by the fact that during the year 1922-23 the tonnage of paper exported was only 25 per cent. greater than the tonnage of pulp exported, yet the value of the exports of paper was about 90 per cent. greater than the value of the exports of pulp. The relative change in value in passing from pulpwood to wood pulp is even greater than in passing from wood pulp to paper.

The growing appreciation of this last fact, together with the growing conviction that Canada does not possess unlimited supplies of timber, although the Dominion is, fortunately, blessed with large quantities, leads us to assume that there is likelihood of further restrictions on the export of unmanufactured wood from Canada. The Canadian mills undoubtedly need every stick of pulpwood that is growing at the present time, and there is some question as to whether there is enough pulpwood growing now to keep the mills running until such time as belated efforts at reproduction of the forest shall have become effective.

The outlook for this industry, as for others, is very largely dependent upon the relative supply and demand. At the present time there is a very close balance. Mills are running practically at capacity, and general business conditions are such that the volume of advertising, both in newspapers and in periodicals warrants a consumption that absorbs the current supply. This situation, of course, puts the paper industry in a very firm statistical position, and the leaders in the industry are exerting themselves in every way to maintain these stable conditions. They are resisting the temptation to increase prices, merely on the strength of the market, and on the other hand, are endeavoring to give the working man the maximum possible return for his labors, without so increasing cost of production as to require a new adjustment of prices; but there are indications that manufacturers will be forced to revise prices this summer. The aim is to furnish the consumer with the goods he requires at such a price as will enable him to buy all that the mill can produce. This, of course, makes for the fullest degree of employment both by the producer of paper and by the consumer of it, and the public benefits by the distribution of the earnings of both parties.

Consumption of printing papers for newspapers and magazines and books has been consistently increasing for some time, and has now reached a record level. This consumption, however, very quickly reflects, and is affected by general business conditions; this may be noticed in the fluctuation of as much as 32 pages in some papers from week to week, and of from 2 to 8 or more pages in daily newspapers, and even more in the Sunday editions.

There has been a distinct migration of the newsprint industry to Canada, with the result that the current production is at the rate of about a million and a quarter tons of newsprint per annum. This will be increased largely during the current year by new machines which are now being installed or under construction, so that by this time next year we shall doubtless see the production of newsprint in Canada exceeding that in the United States, and therefore putting Canada in the position of the world's leader in the production of this most important commodity.

There is also an evident tendency to increase the production of other grades of printing paper, and when the time comes for a further restriction on the export of unmanufactured wood, in fact even without such a move, we are likely to see in Canada the establishment of mills making the finer grades of book papers and involving the production of soda pulp from our large resources in poplar and other suitable wood. This tendency will be affected by any revisions of the U. S. tariff.

The burning question remains, as it has for some time, as to whether the markets will accept all available and prospective production, and whether, in view of forest fires and other destructive agencies, there will be sufficient timber to maintain established and projected mills at maximum capacity. In view of these questions, the leaders of the industry are proceeding cautiously, thankful for the current prosperity in the industry, and trusting that the future will bring no serious setback.

A Christian helps the cause of God not so much by what he says as by what he is.

A sense of duty may not be the highest motive, but the best men are moved by it.

CAPITALIZE OTHER MEN'S BRAINS

By FRANK FARRINGTON

In "The Bookseller and Stationer"

One of the least successful business men I know is a stationery dealer whose business has practically stood still for the last thirty years, a man who thought when he started in with his own store that he knew enough about business to make a success of it.

He has seen other men start in business at his side, develop into prosperous merchants and rise far beyond him while he has year after year remained on the ragged edge of failure. He is a man who never admitted that any outsider could tell him anything about how to run his store. He knew more about his business than any of these trade paper fellows. You needn't try to tell him that some chap who never saw the inside of his store could tell him what he ought to have in stock. And so on.

The Most Successful Business Man

Probably the most successful business man I ever knew was John H. Patterson, President of the National Cash Register Company, up to his recent removal by death. Mr. Patterson not only knew that outsiders could give him ideas about his business, but he was constantly seeking for ideas and information from outsiders. He was never satisfied with what his own force, even his own experts, could offer in the way of business suggestions. He drew on the outside brains wherever he found them. Each man he met was given an opportunity to show what that particular man knew that Mr. Patterson might learn. Whenever I came in contact with this remarkable executive, even when seated next to him at dinner in his own home, I found that instead of the occasion being an opportunity to learn from Mr. Patterson some of the things I would like to have learned, he wanted to know what I knew that he did not know. It was not that he regarded me as better informed than himself, but he realized, what some of us fail to grasp, that almost anyone, outside of our business, or inside of it, knows something applicable to our business that we do not know. Often the outsider's viewpoint offers something no one inside of the business will ever discover for himself.

Seek for Ideas

If anyone may be considered to have learned his business well enough to be able to manage it without seeking or accepting suggestions from outside, John H. Patterson might be regarded as such a man, but he did not allow himself to fall into that attitude. He sought for outside ideas from men and from business books and trade papers. He knew that men who spent time and effort to work out ideas worth printing have ideas worth consideration. Business literature that had passed through Mr. Patterson's hands showed by the frequent penciled interlinings that he recognized and took note of the ideas that he regarded worth while.

The passing of the three-score-and-ten mark did not lessen Mr. Patterson's desire to learn and I have heard him repeatedly declare that he expected to go to school as long as he lived, meaning that he would continue to learn from whoever had anything worth his learning.

Well, you and I cannot, perhaps, become successful to the extent Mr. Patterson succeeded, but we certainly can take a leaf from his book and determine to learn all we can wherever we can and thus keep on growing in knowledge of business matters as long as we remain in business.

There is a great opportunity for the business man today that did not exist for the business man of twenty-five years ago. There are countless business books adapted to the use of retail stationers and booksellers —and it must be admitted that a good many booksellers are not very well acquainted with the business book market. But, even more important than the business books, are the business periodicals, especially those directly devoted to the business in which we are engaged.

The Trade Paper

The success of a trade paper depends upon its ability to give its subscribers information of value to them in their business. If it cannot help its readers, it cannot retain them as subscribers and it will suspend publication. When a trade paper keeps going and improving and gaining in prosperity, you may be sure it is giving its readers valuable help and that many of them are reading that paper closely. You may not read it. You may think it contains nothing of help to you, because you have not read it to find out, but just as surely as the paper endures, just so surely it is delivering the goods to those who will accept delivery,

The man who subscribes for a trade paper and does not read it throws away his money and in addition he throws away opportunities. Just one good idea passed by may cost the loss of hundreds of dollars. Just one good idea picked out may bring hundreds of dollars. It is always taking a chance to let a number of "The Bookseller & Stationer" or any other good trade paper to go unread. Many a merchant has failed just because he gave his spare time to reading the sensational "extras" of the evening press instead of to reading and studying his trade papers.

Through some years in the retail handling of books and stationery I found the trade paper the source of ideas and inspiration that were the making of the success of my store. If I have reached a point where I am able to say some things through the trade paper that will help others, it is due to the fact that years ago I discovered that those publications contained just what I needed to enable me get more business myself.

Many of the merchants you have seen achieve suc-

cess have the trade paper to thank for much of that success. Unfortunately some of those men backslide. They reach a point where they think they know enough about business—as if anyone ever did—and they cease learning and their business ceases growing. But that is in spite of the trade paper, not on account of it.

Probably no reader of "The Bookseller & Stationer", outside of a few experts, realizes what it costs in time and money to produce the "Record of New Books" which appears in each issue. This Record is taken as matter of course by most subscribers. It offers a service that otherwise could be obtained only at great expense, if at all. It tells the bookseller just about all he needs to know about these books as they appear. And no doubt there are subscribers to the paper who do not use that Record!

It is so with the best features of most trade papers There are readers, or perhaps I should say "subscribers" who do not realize their value or take advantage of them. As an old trade paper reader, let me warn every dealer not to neglect the careful use of his trade paper. Subscribe for one or more papers whether you read the newspapers and the latest books or not.

If you become as great a success in business as John H. Patterson, you may not then need to follow this course, but if you do become as successful, you will then know too much to neglect the source of even greater success.



MR. H. BIERMANS,
President Belgo-Canadian Paper Co., See page 561.

SPECIAL FAST FREIGHT FOR NEWSPRINT.

Announcement was made yesterday by the Canadian National Railways of the inauguration of a new fast freight service especially for Canadian newsprint, between Montreal and New York. This new service will start on June 1, and is planned to be so speedy that it will be possible for Canadian newsprint to be shipped from such mills as those at Shawinigan Falls and Grand'Mere one day and be turned out from New York printing presses with the latest news three days later.

In inaugurating this fast service for the "paper special" it was stated that the Canadian National Railways are cooperating with the Central Vermont, a subsidiary of the C.N.R. and the New York, New Haven and Hartford Rail way. In this way the trains of paper and other fast freight, when necessary, will be made up at the Grand Trunk yards here and hauled by Canadian railways over three-quarters of the distance to New York, the New York, New Haven and Hartford getting the shorter end of the haul on the latter part of the run to New York.

This has been arrived at by a working arrangement between the three railways for the fast freigh service, the train running over the Grand Trunk to St. John's, Que., over the Central Vermont to Willimantic, Conn., and thence over the N. Y., N. H. & H. to New York.

It is planned that the "paper special" shall be made up at the Grand Trunk yards daily, so as to pull out about 4 o'clock each afternoon and arrive at New York on the morning of the second day sufficiently early to provide that the paper shall be available for the second morning delivery there, about 8 o'clock, so that if taken direct to the newspaper offices it will be immediately ready for the presses for afternoon editions. This, it was stated, was a speedy delivery not far behind that of the average express despatch.

Arrangements are being made by the Canadian National Railways for a special service from the pulp and paper centres connecting with their lines and feeders. These include the mills at Shawinigan Falls, Grand'Mere, Chicoutimi, Jonquieres and East Angus, in Quebec province; Bathurst, N. B., and Iroquois Falls and Smooth Rock Falls, in Ontario. The newsprint will be brought to Montreal in carload lots and then made up into the "paper special" for its daily run to New York.

It is not expected that there will be sufficient newsprint for export from the Canadian mills to make up a complete trainload every day. In such case it is planned to add sufficient cars of freight needing special despatch to make up a complete train, so that there will be plenty of paying goods for the "paper special."

"This is just the kind of speedy service the pulp and paper industry in this country has been looking for, and it will prove most acceptable to both the manufacturers of newsprint in Canada and to the American consumers," said Edward Beck, secretary of the Canadian Pulp and Paper Association.

"Conditions in the paper industry today are such that it is practically impossible for a newsprint mill to accumulate much of a surplus stock. For the same reasons newspaper publishers find that the demand is such that they are unable to get in much advance stocks for their require ments.

"Generally speaking, there is today a smaller accumulated stock of paper either in the warehouses of the publishers or the storehouses of the mills than at any time within recent years. For that reason, if for no others, such a service as that proposed will be appreciated, as it will be of considerable benefit to the producers of newsprint in Canada."

THE WOODLANDS SECTION

A SERIOUS FOREST SITUATION.

The reason that our pulp and paper mills have not as yet felt the actual imminent shortage of the available pulpwood supply is due to the large amount of cutting that has been done in the endeavour to salvage as much as possible of the two hundred million cords of budworm killed wood. However, the present year will probably see the end of the salvage period of this dead wood as it has now largely got beyond a usable condition, and when the operators again look about for a chance to cut in green timber they will then very soon realize that there is an acute shortage in the supply. Notwithstanding this tremendous shrinkage in our standing timber we keep adding to our consumption to such an extent that in a five year period the increase in Canada has amounted to 100%, and at the same time the loss from fire is also increasing from year to year and, as the country becomes drier from lack of forest cover, will continue to increase.

These vital factors are quite overlooked in estimating how long our standing timber will last. It is the common custom to take the amount of the stand and divide it by the amount of the present cut despite the fact that the loses from the above mentioned causes is more than ten times the amount of depletion by the axe, and that consumption is increasing at the alarming rate above noted. When the timber on the steeper mountain slopes which should never be cut and also the inaccessible growth is deducted the available stand of live wood is reduced to a very small quantity. Over and above all this the most serious thought for our consideration is that our watersheds are already over-denuded of forest growth to such an extent that many of our mills have to operate at half capacity or less for four or five months in the year from lack of power, with alarming freshets in the spring, causing untold damage together with severe climatic changes, and an alternating of cold and heat which are disastrous not only to agriculture but to human life as well.

Montreal May 24 1923 Frank J. D. Barnjum.

AMERICANS ANXIOUS OVER POSSIBLE TAX ON PULPWOOD

Cleveland, O., May 24.— "The permanency of the paper industry in the United States is largely dependent upon the protection of our nation's forests, said Dr. Hugh P. Baker, the technical forester who is executive secretary of the American Paper and Pulp Association speaking before the Cost Association of the Paper Industry at the Hotel Cleveland today. "Canada, I am convinced is determined to control the industry on this continent, and already is so nearly in control of the news-print side of the industry that there is talk among our friends across the border of an export duty upon newsprint.

"Canada is a foreign nation, though we speak the same tongue, and we must first of all look to the permanency of the paper industry within our own borders. The solution of our problem is entirely dependent upon our protection of our forests.

"Undoubtedly, the paper industry of the United States faces an increase in the cost of the pulp wood now being imported from Canada through the proposal now being considered in Canada to impose an export tax upon all pulp wood exported to United States mills.

"An export tax upon wood from freehold lands, if not a complete embargo upon wood from those lands, is very imminent.

"Within a year or two Canada will be producing more newsprint than the United States. It is entirely within the bounds of probability for us to look forward to an export tax upon Canadian newsprint as soon as Canada feels that she has that phase of the industry on this continent well within her control. Such a tax has already been suggested in Canada.

"It would appear from reports in trade Journals that the Canadians are now considering following up their successful efforts to control the newsprint industry of the continent by similar campaigns to control other branches of the paper industry.

THE FIRE RANGER SEEKS CO-OPERATION

It is well recognized among those in charge of the work of protecting the forest that one of the greatest aids in attaining that object is the work of the fire rangers in enlisting the sympathy of the travellers, campers, and other temporary residents of the areas to be protected and securing their friendly co-operation, especially in the way of attending to their own camp-fires, etc. This idea is emphasized by the chief fire ranger in charge of one of the vast fire-ranging district of the north. He writes:—"It has been gratifying this fall to receive letters from tourists, prospectors, trappers, and traders, thanking the rangers for courtesies extended to them, also complimenting us on our work. The rangers have certainly been of great service in many ways to the public. The information they give is always reliable."

"I hold, without hesitation, that the potential forest weath in this country should be developed in the light of patriotic commercialism and administered as a trust for the future needs of the country, and that not a single stick of timber should be cut that will create detrimental conditions for those who come after us. Some time or other, we shall be face to face with the problem of whether or not commerce shall be allowed to rob our forest irrespective of future demands. It will come to us just as it has come to China in the past, so that actuated by these conclusions we ought not to waste a single tree from the forests we now have, and we ought to replant and reproduce without stint so as to leave this fundamental resource in undiminished plenitude for the people of a still greater Canada. The sooner we face the bald question, the easier it will be for us to decide. To what extent are we going to permit the forest resources of the country to be commercially exploited and exported for the purposes of selfish gain?"

—Right Honourable Sir George Foster.

FORESTRY ABSTRACTS

B-2 Research Work of the Dominion Forest Service. W. G. WRIGHT. **Can. For. Mag.** XVIII No. 3 (March, 1922, p. 673)—C.L.

B-2 Improvement Cutting on a Commercial Basis at Petawawa Experiment Station. J. C. VENESS. **Can. For. Mag.** XVIII No. 4 (April, 1922, p. 724). Describes an interesting experiment by the Dominion Forestry Branch on this area in the white pine region of Ontario. Cutting of poplar and birch was conducted with a view to increasing the productiveness of softwood species; logging slash was lopped and scattered. Periodical observations will be made, to determine results.—C.L.

B-2 Tree-Planting-A Form of Surgical Operation. B. R. MORTON. **Can. For. Mag.** XVIII No. 4 (April, 1922, p. 730). Describes precautions that should be taken in setting out trees—C.L.

B-2 Variations in Northern Forest and Their Influence on Management. E. F. MCCARTHY. **J. For** XIX No. 8, (Dec. 1921, p. 867). Compares forest types of the Algoma District of Ontario with those of the Adirondacks, with incidental references to conditions in pulpwood forests in selected regions of Ontario, Quebec and New Brunswick. Emphasizes the need for digesting and correlating existing data, as a basis for the beginning of forest regulation.—C.L.

B-2 A Study of Regeneration on Certain Cut-over Hardwood Lands in Northern Michigan. PROF. P. L. BUTTRICK. **J. For.** XIX No. 8 (Dec. 1921, p. 872). Sprout growth following cutting offers promise of reasonably satisfactory regeneration of the hardwood species, provided fire is kept out. However, the logging slash after seven years is still undecayed or even matted down and remains a serious fire hazard.—C.L.

B-3 Scouting for Fires and Fighting them by Aeroplanes. CAPT. F. C. HIGGINS. **Can. For. Mag.** XVIII No. 4. (April, 1922, p. 738). Record of twelve days operations in Crows' Nest Forest Reserve, Southern Alberta.—C.L.

B-3 Fire Weather Forecasts-A New Feature in Timber Guarding. E. T. ALLEN. **Can. For. Mag.** XVIII, No. 4, (April, 1922, p. 740)—C.L.

B-3 Fighting Insects by Means of Aeroplanes. C. R. NEILLIE and J. R. HOUSER. **Can. For. Mag.** XVIII No. 4. (April, 1922, p. 741). Insecticide was distributed by aeroplane, over a grove of catalpa trees, near Dayton, Ohio, to protect it against destruction from a serious outbreak of the Catalpa Sphinx, a night-flying moth. The poison dust was effective in destroying 99 per cent of the insects.—C.L.

B-3 Physical Control of Fires. S. B. SHOW **J. For.** XIX No. 8. Dec. 1921, p. 917). Fires occur much more frequently, and are more serious on south slopes than on others; slopes with a northern exposure are safest from fire. Fires in brush spread more rapidly than in timber.—C.L.

B-3 Forest Fires the Plague of the Fur Trade. Can. For. Mag. XVII, No.2. (Feb. 1922, p. 603),—C.L.

B-3 The Railways and Forest Protection. CLYDE LEAVITT, Chief Fire Inspector, Board of Railway Commissioners for Canada. **Can. For. Mag.** XVII, No. 3 (March, 1922, p. 657). Describes the fire protection work of railways in Canada, under the requirements of the Railway Commission. Excellent co-operation is maintained, and the work is generally very effective. —C.L.

B-3 Protection Methods in Canada's Forest. .PROF. W. N. MILLAR. **Can. For. Mag.** XVIII No. 4 (April, 1922, p. 711). The total annual expenditure for forest protection in Canada, by all agencies, is probably not less than $1,500,000. In no case has there as yet been developed a staff capable of making a close scientific study of the problem of fire protection, resolving it into its elements and building up on a basis of known facts a business-like organization and mode of procedure. The importance of forest protection is indicated by the fact that fully 65 per cent of the country is capable of producing no other form of useful commodity. The article discusses desirable means of prevention, detection and suppression of fires, and supervision of forces. For continuation, with full discussion of work in the field, see May and June issues. An exceptionally valuable series of articles—C.L.

B-3 Cleaning up Debris in Pine Forest. ROLAND D. CRAIG. **Can. For. Mag.** XVIII, No. 3, (March 1922, p. 664). Broadcast burning of logging slash is not recommended in the pine type, on account of severe damage to soil and young forest growth. The author recommends the piling and burning of slash as cut: this greatly reduces the fire hazard and greatly facilitates logging operations, particularly skidding—C.L.

B-3 Insect Armies that Follow in the Wake of Fire. J. M. SWAINE. **Can. For. Mag.** XVIII No. 3, (March, 1922, p. 666)—C.L.

B-4 The Woods and Markets of British Columbia. WM. TURNBULL. **Can. For. Mag.** XVIII No. 3 (March, 1922, p. 673) See also April issue, at page 726 for continuation.—C.L.

B-9 Ontario's Forest as a Continuous Crop. HON. E. C. DRURY, **Can. For. Mag.** XVIII, No. 2. (Feb. 1922, p. 605),—C.L.

B-9 Canada Must take Out a Timber Insurance Policy. R. O. SWEEZEY. **Can. For. Mag.** XVIII. No. 2. (Feb. 1922, p. 614),—C.L.

B-9 Sustained Annual Yield as a National Policy of Forestry. PROF. RUSSELL WATSON. J. For. XIX, No. 8, (Dec. 1921, p. 817). A discussion in support of Prof. Roth's plan of national regulation of forests in the United States, with a brief exposition of that plan. The main bodies of virgin supplies will be exhausted about 1970. There is a serious deficit in the area of timber stands over 60 years old, which means that there will be a period of extreme shortage of timber of larger sizes, culminating with the comparative exhaustion of virgin supplies about 1970 since after that time supplies must come from second growth. Advocates Federal regulation of cutting on the remaining forests in such a way that neither the area nor the volume will be reduced, that is, in such a way that the cut takes only the growth, so that a continuous supply of timber will be provided. Adequate fire protection will not be obtained on the forest lands now being logged until sustained annual yield of the area (usually not over 90,000, acres in extent) is obtained. Under a sustained annual yield policy a continuous lumbering operation is carried on. On a 90,000 acre tract, cut over on a 20-year return plan, selection system, a lumbering crew could be kept constantly at work-logging, road building and maintenance, sylvical work, planting and fire protection. A crew of forty men could be employed here constantly; and forty men to 90,000 acres would give a pretty good secondary line of defence in fire-fighting. It would just about insure adequate fire protection. The object of the program advocated is to prevent forest devastation and leave a stand of growing timber after logging—C.L.

NO EXPORT ON NEWSPRINT CONTEMPLATED

Commenting on the statement attributed to Dr. Hugh P. Baker, secretary of the American Paper and Pulp Association, appearing in a dispatch from Cleveland, O., which set forth the view that Canada is due within a few years to dominate the United States as a paper-producing country. Edward Beck, manager of the Canadian Pulp and Paper Association, says that Dr. Baker, if he is correctly reported, is somewhat more advanced in his views than most of those engaged in the paper industry in Canada.

"Canada," said Mr. Beck," enjoys certain advantages in the possession of cheap pulpwood and of hydro electric power applicable to paper-making which put it in a superior position for the production of newsprint paper. Coupled with a gradual diminution of the commercially available pulpwood in the Eastern United States, these advantages have led to a gradual transfer of the newsprint industry to Canada, which has been accelerated by the application of much American capital to its development. It is probable that within two or three years Canada will be producing more newsprint than the United States, but I doubt that it is within the bounds of probability, as stated in the remarks attributed to Dr. Baker, that this country will ever impose an export tax on newsprint. Such a thing has never been seriously suggested and it would receive scant consideration from anyone, least of all from the government at Ottawa, which is doing all its utmost to promote friendlier trade relations with the United States. Such a tax, were it proposed, would be vigorously fought by the paper-making industry in Canada.

"As to the designs Canada is said in the statement to be harboring to control other branches of the paper-making industry, Dr. Baker is completely misinformed. Taking book paper for an example, the Americans now produce and consume an average of over a million tons of this class of paper a year. Canada produces only about 60,000 tons. We could not, if we would, make any serious inroads in the United States book paper market. As a matter of fact, a greater volume of book and fine papers is imported into Canada than is exported from Canada. Much of the book paper in the United States is made from paper stock in which cheap woodpulp plays but a small part, while the finer grades of bonds and writing papers are made from rags and other materials. In these raw materials Canada enjoys no advantage whatever; in fact, the advantage is with the United States where they are obtainable in greater abundance.

"Dr. Baker is engaged in a laudable campaign on behalf of forest conservation in his country. He naturally put forward the most alarming suggestions as to what may follow if the depletion of pulpwood is allowed to continue without some provision being made for its replacement. That is why Canada is being held up as likely soon to control the paper-making industry of the North American continent to the detriment of the United States. The facts in this respect, however, do not bear out Dr. Baker's contentions."

Mr. E. R. Dalrymple, whose excellent article on the electric steam generators at the Laurentide Company formed one of the features of the last annual number of the Pulp and Paper Magazine, is being married tomorrow to Miss Gladys Lenore Hutchison.

INSTITUTE ITEMS

SPECIAL COURSE OF STUDY FOR PULP & PAPER WORKERS

(From the Kenora, Ont. *Examiner.*)

The Kenora pulp mill employees will be called upon by the Institute of Industrial and Domestic Art's representative, Mr. Piché, of Gardenvale, Quebec, to take up the study of a special course on pulp and paper manufacture. The Keewatin Lumber Company, pulp mill division, intends to give, with the co-operation of members of a local Educational Committee which will soon be organized, a series of lectures to all employees interested. These lectures, to be started next fall, will be given in connection with this special course of study which is based on a set of textbooks which have been written with the co-operation of the best minds in the pulp and paper industry.

Both the Pulp and Paper Association of Canada and United States are behind this idea of giving to the average pulp and paper mill employee the opportunity of getting more information about the industry in which he is engaged.

This set of textbooks, on which the institute's course is based, covers such studies as arithmetic, mathematics, mechanics, physics, chemistry and electricity as a solid and necessary foundation for that part of the course, which goes into detail with respect to process, practice and appliances in all branches of manufacturing pulp and paper.

The Institute of Industrial and Domestic Arts has already organized this special course of study in some of the Ontario, Quebec and Pacific Coast pulp and paper mills, while, on the other hand, the University of Wisconsin have enrolled quite a number of students in the United States mills.

Mr. Piché has just returned from the Pacific Coast where the Powell River, Pacific Mill and Whalen Pulp and Paper mills have been visited. The heads of these different mills were very enthusiastic over the idea of such a special course of study on pulp and paper manufacture. Some sixty ambitious Pacific Coast mill employees have already started on their studies, while, in a near future, quite many others are anticipated, by Mr. Piché, to take up this special course of study.

TROUBLE WITH WIRE SEAM

Editor, Questions and Answers.

Dear Sir. — The trouble is caused by a slackness or slight bagging of the wire behind the seam. This may have been caused by starting the wire too tight, when first put on the machine, or it may have been a faulty seam.

This particular wire will always give trouble now, but to try and improve matters, I would suggest striking out the wire so that the seam lies along the under couch roll, then give it a good firm rub along the seam with a smooth glass bottle. After that I would be inclined to slacken the wire a little before starting up.

When the wire comes off, it would be well to preserve the whole seam, and send it, with sample of the paper showing defect, to the wire maker, and hear what he has to say about it, as the wire won't run the full time in that condition.

When you get this trouble it is always worst on thin papers. Yours truly,

AN OLD TIMER.

Technical Section

REVIEW OF RECENT LITERATURE

A — Properties & Testing of Materials

A-1 E-0 The Properties of Wood in Paper Making. Bjarne Johnsen and H. N. Lee, **Pulp & Paper** 21, 11-4, 135 (Feb. 1, 1923); PAPER MILL 47, No. 4, 10, 12, 46, 50 (Jan. 27, 1923); **Paper Trade J.** 76, No. 5, 53-56 (Feb. 1, 1923); **Paper Industry** 4, 1529-1532 (Feb. 1923); **Paper** 31, No. 15, 11-14 (Jan. 31, 1923). The authors discuss cord measurement density and rate of growth, chemical composition (cellulose content), decay, and seasoning, in their relation to the manufacturing process, more particularly with respect to the sulphite process.—A.P.-C.

A-3 Bean Straw as Raw Material for Paper. H. Postl. **Wochbl. Papierfabr.** 54, 973 (April 7, 1923). It is suggested that those substances in bean straw possessing high fertilizer value be extracted by a mechanical process and that the remaining cellulosic material be used for producing paper and paper board. Bean straw contains 10.00% moisture, 7.04% ash, 6.19% protein, 39.13% crude fiber, and 35.26% nitrogen-free extract. —J.L.P.

A-3 Paper from Adansonia Bast Fibers. Anon. Mitt. de. Materialprufungsamtes zu Berlin-Dahlme. **Wochbl. Papierfabr.** 54, 973 (April 7, 1923). Recent tests, confirming earlier ones, have shown that Adansonia properly cooked yields very strong fibers. The average breaking length amounted to approximately 5700 m. and the average folding endurance to approximately 1700.—J.L.P.

A-3 Fibers from the Potato Plant for the Manufacture of Paper. Heinrich Eggers and Adolf Burlin. Ger. patent 370,197. **Papierfabr.** 21, (Mar. 25. 1923). The washed and comminuted potato plants are cooked under a 2 to 3 atmospheres pressure in a 2% caustic soda solution. After washing and disintegrating, the resulting mass is bleached in a 4% to 6% chloride of lime solution with continuous agitation. A treatment with sodium bicarbonate solution completes the process. —J.L.P.

A-3 East African Bamboo as a Paper Making Material. BULL. IMP. INST. 20, 458,461 (1922). Bamboo (Arundinaria alpina) from kenya colony had the following composition: moisture 9.5, water-soluble material 3.6, cellulose (in material as received) 47.5, cellulose (on dry basis) 52.5, ash 1.2 Length of ultimate fibers 1.6 to 2.7 mm., mostly 2.0 to 2.6, average 2.3 mm. Cooking on a laboratory scale for 7 hours at 160°C., with 16% of caustic soda (on the weight of the raw material) as a 4% solution gave 40% of a pulp which was not completely broken up in the beater and could not be satifactorily bleached. Using 20% of caustic soda under the same conditions gave 34% of a pulp of good felting qualities which could be readily broken up and furnished a pale brown paper of good strength. The pulp bleached readily (bleach consumption equal to that of soda wood pulp) (31% yield on the raw material) giving a white paper of good quality. About 1.5 tons of bamboo were heated for 12 hours with an extra strong caustic soda solution (without removing the nodes) and furnished a pulp which bleached satisfactorily and yielded white paper of good quality. The yield of sized and loaded paper was 41.23% on the weight of bamboo. The paper was somewhat soft, but could have been improved by longer beating. Better results would be obtained by selecting the stems and keeping those of different ages separate from one another.—A.P.-C.

A-4 E-1 Determining the Degree of Disintegration (Digestion) of Pulp. Helmer Roschier. **Pappers och Travarutid. Fur Finland,** No.7 (April 15, 1922); **Pulp & Paper** 21, 35-36 (Jan. 11, 1923); 20, 2023 (Dec. 21, 1922); **Paper Trade J.** 76, No. 5, 60, (Feb. 1, 1923). A.P.-C.

A-12 Quantitative Determination of Adhesive Colloids in Glue. Franz Lorenz. **Papierfabr.** 21, 105,-110 (Feb. 25, 1923). Full directions are given for the following methods for testing glue: moisture, ash, acid content, foreign substances, and adhesive colloids. The last one is carried out according to the Wislicenus absorption method. The apparatus is sketched and a detailed description is given of the procedure. References are made to the following tests: viscosity, melting point of the jelly, degree of swelling, solubility, tensile strength, and binding power.—J.L.P.

E-2 Determination of Sugar in Waste Sulphite Liquor. M. Kleinstuck. **Zellstoff U. Papier** 3, 51 (Mar. 1923). The method of Glassmann, employed for determining hexoses and pentoses, is modified in that the mercury freed by the sugars is allowed to react with iodine solution in the cold; the excess iodine is titrated with thio-sulphate solution. The procedure is given in detail.—J.L.P.

D — Mechanical Pulp Manufacture

D-4 Influence of the Grinding Temperature on the Properties of Groundwood. Johannes Teicher. **Papierfabr.** 21, 153-158; 165-168 (March 18, 25, 1923). Fresh water was used in all the grinding tests. Experiments were carried out at 18, 25, 33, 40, 46, 57, 60 and 64°C. Raising the grinding temperature refines the product until 57° is reached, at which point the stock dilution is 1:30.8. A miscroscopical investigation at 57° showed the presence of many individual fibers together with small amounts of mucilaginous substances. The breaking length of hand-made paper made from groundwood produced at 18° was 2359 m.; at 57°, it increased to 3856 m.; at 64°, there was a decrease to 3002 m. The grinding at different temperatures had no effect on the rosin and fat content of the groundwood.—J.L.P.

D-4 Quick-Acting Automatic Grinder Regulator. A. Sylvestre. Papeterie 44, 1058-1062 (Dec. 10, 1922). A description of the regulator (for motor-driven grinders) of the Compagnie Electro-Mécanique, which consists of a value for regulating the hydraulic pressure of pistons in the pockets, said valve being operated by a rotary magnet by means of an eccentric. The magnet is operated by means of a Brown quick-acting regulator,

which, in this case, is concentrated like a wattmeter, its action depending on a change in the current and voltage of the motor. The regulator and magnet are in equilibrium as long as the motor works under a given (and adjustable) load. As soon as the latter changes, the regulator comes into play, and with it the magnet, which operates the hydraulic pressure valve to restore the load to its former value. The regulator can be adjusted for any given power consumption of the motor within limits of 30 to 100% by means of a screw which changes the torsion of a spiral spring in the regulator. —A.P.-C.

D-4 Device for Regulating the Water Pressure in Wood Grinders. George Nenzel. Ger. patent 368,785 **Papierfabr.** 21, 116-117 (Feb. 25, 1923). Water pressure is produced by a pump, the operation of which depends upon the load on the motor.—J.L.P.

D-4 Stone for Wood Grinders. Hermann Hustedt. Ger. patent 364,490. **Wochbl. Papierfabr.** 54, 617 (Mar. 3, 1923). The surface of the stone is grooved so as to produce blunt teeth.—J.L.P.

D-4 Regulator for Motor Driven Grinders. C. A. Boddie, assignor to Canadian Westinghouse Co., Can. patent 227,304 and 227,305, Dec. 19, 1922. The grinder is preferably driven by a three-phase motor, and a load is applied to the grinder by a hydraulic system. The hydraulic pressure is controlled by a main valve which in turn is controlled by an auxiliary valve. The latter is operated by the regulator, which comprises an operating lever connected to the auxiliary valve and an electromagnet connected to the operating lever. A hydraulically operated reactance device changes the setting of the device and prevents hunting action. Comprises two pistons operating in separate cylinders and suitably connected together. One cylinder is supplied with fluid pressure to operate its piston in accordance with the operation of the main valve; and the second similarly operates with the auxiliary valve. The second cylinder is connected to the operating arm of the regulator for so changing the setting of the regulator as to prevent hunting action.—A.P.-C.

D-4 Method of Mounting Grinding Stones. W. H. Sumbling. Can. patent 228,534, Feb. 2, 1923. The end of the shaft is provided with a circular reduced bearing end, which terminates at its inner end at an annular shoulder formed in the shaft. Opposite sides of the shoulder are cut away longitudinally to the shaft to form two parallel flat faces outside of the shoulder. An inner circular bored flange is mounted on the reduced end and has its inner end cut transversely with the parallel faces of the shoulder so that the flange will positively turn with the shaft. The stone is mounted on the reduced end, and means are provided at the outer portion of the reduced end to clamp the stone firmly in position, thus holding the flange against the shoulder.—A.P.-C.

D-0 E-0 F-0 Utilization of Decayed, Insect-Killed, or other Inferior Wood in the Manufacture of Pulp. John S. Bates. **Pulp & Paper,** 21, 77-80 (Jan. 25, 1923). After reviewing information on this subject published recently on this continent, the author concludes as follows: In groundwood manufacture decayed wood gives a medium to high yield, but the quality of the product is poor. This method of utilization should be discouraged except for low grades and, where necessary, for ordinary grades (newsprint) in proportions up to 5 or 10%. Long storage of infected groundwood should be avoided. The sulphite process gives a comparatively high yield and the quality is fairly good. This process is suitable for the production of low and medium grades (including newsprint sulphite. The soda process gives a rather low yield and only fair quality. The kraft process gives a medium yield and the quality of the pulp is fairly good. This process has a wider application than any of the others and the results with decayed wood may be considered favorable when the proportion is not too high. Sorting decayed wood in order to cook it separately in any of the processes would probably allow slightly higher yields and better results; but this procedure is not always feasible. In many cases good results are being obtained by feeding decayed wood in moderate proportions into the pulp mill uniformly with the sound wood. The same considerations hold true for finished pulp.—A.P.-C.

G — Treatment of Pulp

G-11 Fiber Recovery from the Back-Water of Paper Mills. Victor Antoine. Ger. patent 361,189 **Wochbl. Papierfabr.** 54, 322 (Feb. 3, 1923). The back-water is conducted through two lines; the fibers suspended in the main line are collected in a mechanical screen, the fibrous suspension in the other is used again in the manufacturing process.—J.L.P.

G-11 The Waste Water Question in the Pulp, Paper and Board Industries from a Hygienic and an Economical Standpoint. A. Pritzkow. **Zellstoff U. Papier** 3, 30-37 (Feb. 1923). A very general and thorough discussion of the waste water problem covering all phases of the industry.—J.L.P.

G-11 K-13 Reclaiming Stock in Paper Mills. George D. Bearce. **Paper Trade J.** 76, No. 9, 52-53 (March 1, 1923); **Paper Mill** 47, No. 9, 10-12 (March 3, 1923), **Paper** 31, No. 20, 17-18 (March 7, 1923); **Paper Ind.** 4, 1703-1704 (March 1923). A discussion of the importance of preventing fiber losses in mill effluent and of the re-use of white water and of various types of savealls.—A.P.-C.

K — Paper Making

K-4 Process for the Treatment of old Paper, Pulp, Groundwood, or other Material Serving for the Manufacture of Paper. George Kolb. Ger. patent 370,047. **Papierfabr.** 21, 172-173 (Mar. 25, 1923). The fibrous material is suspended in water in an upright circulation tank. This is provided with a central tube to which one or more pipes are connected which discharge into lower part of the tank. A pump or other propelling device circulates the fibrous suspension through the arrangement.—J.L.P.

K-12 Modern long and Cylindrical Board Machines. Eng. Hoyer. **Papierfabr.** 21, 61-63 (Feb. 4, 1923). An account of the recent development of these machines with descriptions of four modern German ones.—J.L.P.

K-12 Modern long and Cylinder Cardboard and Pasteboard Machines. Eng. Hoyer, **Papierfabr.** 21, 33 (Jan. 21, 1923). An account of the development of these machines.—J.L.P.

TECHNICAL SECTION SUMMER MEETING

Plans are almost complete for the Summer Meeting of the Technical Section, to be held June 21 and 22 in and around Montreal. The committee is arranging a corking good program. Particulars next week.

P. S. It will be perfectly proper to bring the ladies.

EXPORTS OF PULP AND PAPER APRIL — 1923

A report issued by the Canadian Pulp and Paper Association gives details of the exports of pulp and paper for the month of April. The total value of these exports last month was $9,397,472 an increase of $2,907,113 over the corresponding month in 1922.

Details for April are as follows:

	April 1922		April 1923	
PAPER:	cwts	Value	cwts	Value
Newsprint	1,229,046	$4,371,961	1,567,561	$5,866,001
Book Paper	35	560	2,236	16,517
Other Paper & Mnfrs	—	319,542	—	563,692
		$4,692,063		$6,446,210
PULP:				
Sulphate	163,248	511,615	192,099	618,025
Sulphite Bleached	162,982	654,903	216,942	975,267
Sulphite Unbleached	166,346	452,564	307,727	845,852
Mechanical	128,957	179,214	319,834	512,118
	621,533	1,798,296	1,036,602	2,951,262

It will be seen that in every case, exports were greater than in April 1922. Newsprint exports were greater by 338,515 cwts exports of pulp were larger by over 50 per cent, the increases being particularly large in the case of mechanical and unbleached sulphite.

The principal countries of destination of these exports in April 1923 were:

	Paper	Pulp	Total
U. S. A.	$5,950	$2,623,496	$8,574,446
U. Kingdom	104,949	148,591	253,540
All Others	390,311	179,175	569,486
	$6,446,210	$2,951,262	$9,397,472

Exports of pulpwood in April amounted to 74,438 cords valued at $650,176 compared with exports in April 1922 of 49,076 cords valued at $476,344.

As April is the first month in the fiscal year no cumulative comparison can be made but a comparison for the first four months of the calendar year will be of some interest. For the four months from January 1st to April 30th. Canadian, the principal exports of pulp and paper have been as under:

	4 months 1922		4 months 1923	
PAPER:	Tons	Value	Tons	Value
Newsprint	295,078	$21,171,685	359,012	$26,970,734
Book Paper (cwts)	1,351	12,308	15,483	101,151
Wrapping (Kraft)	5,066	786,205	6,646	1,015,899
Total Paper		23,129,146		29,625,341
PULP:				
Sulphate	43,821	$ 2,714,569	44,992	$ 2,916,554
Sulphite Bleached	39,176	3,404,241	54,302	4,804,692
Sulphite Unbleached	44,570	2,507,552	66,143	2,521,468
Mechanical	67,803	2,287,871	81,882	3,763,584
Total	195,370	$10,914,233	247,319	$14,006,298

Our exports of newsprint for the first four months of the current year were greater than in 1922 by 63,924 tons or nearly 22 per cent; our pulp exports were greater by 51,949 tons or 26 per cent. Exports of newsprint to the U. S. A. for this period amounted to 348,182 tons compared with 272,747 tons in the corresponding period of 1922.

TECHNICAL ASSOCIATION PLANS FOR 1923

While the program in detail of the work of the Technical Association for the year has not been fully developed, in almost all lines its activities can be given.

The general standing committees covering the manufacturing processes, mechanical, sulphite, sulphate and soda pulps, will continue their investigation of proposed modifications and the use of newly developed apparatus, at the same time fostering improvements in efficiency and the establishment of standards of practice.

Coated and Processed Papers

It is planned to give some definite attention to problems of gummed and waxed papers. The plans include the formation of a sub-committee dealing with each of these products.

Vocational Education

The preparation of the textbooks on the Manufacture of Pulp and Paper is expected to be completed during the year. The committee will continue to foster the development of vocational education in the mills and in paper making centers through instruction classes, correspondence courses and foremanship training conferences.

Paper Testing

The committee will direct its attention to methods of testing papers for special purposes as well as continuing its efforts towards improving existing methods. The work on standardization of methods of micro-analysis of paper will also be continued.

Standard Methods of Testing Materials

The committee plans to arrange for publication of the methods that have been approved, with a list of equipment for a mill laboratory, and continuing the preparation of methods for approval.

Paper Drying

An active sub-committee has formulated two paper drying codes, one in considerable detail of special value in conducting an exhaustive test, and the other for daily operating records. Several mills have arranged to co-operate in furnishing records for tabulation and exchange of results among themselves through the committee.

Cellulose

Contact has been established with the Cellulose Section of the American Chemical Society whereby the study of cellulose in its particular relation to pulp and paper will be handled by the Cellulose Committee.

Waste

White water losses and the utilization of barking drum refuse as fuel will be continued by the committee, the work to consist of mill tests on white water and evaporative tests on bark in a number of co-operating mills.

Heat losses throughout the pulp and paper making processes and the handling of materials of all kinds are proposed as two subjects providing a large field for investigation. The problem of heat losses includes the economical utilization of all steam, hot water, etc., and will cover every department of the mill. An investigation of the subject of handling materials will include the best practices in various pulp and paper mills under varying conditions.

The Waste Committee has arranged with the Forest Products Laboratory, the News Print Service Bureau and the Woodlands Section of the Canadian Pulp and Paper Association in a study of the utilization of decayed pulpwood resulting from the attacks of insects and fungi in eastern United States and Canada, which is regarded as the most serious raw material problem confronting a large proportion of the industry.

UNITED STATES NOTES

The Chemical Paper Manufacturing Company has increased its capital stock from $2,000,000 to $2,500,000 by the issuance of 5,000 additional shares of first preferred stock of $100 par value. The authorized capital stock will now be represented by 10,000 shares of first preferred, 5,000 shares of second preferred and 10,000 shares on common, all $100 par.

The sessions of the convention held a week ago by the Northwest Division of the American Pulp and Paper Mill Superintendents' Association at Wisconsin Rapids, draw an attendance of nearly two hundred superintendents, mill managers and owners, technical men and cost men. Without a question the meeting proved the most successful one ever held by this division. There were two business meetings, one at Wisconsin Rapids and the other at Biron. At the latter, papers read by mill superintendents, technical men and others brought out an interesting discussion. The meetings were topped with a banquet served in the Port Edwards Hotel. The delegates and other visitors made inspection tours of mills at Plover, Stevens Point, Wisconsin Rapids, Biron, Nekoosa and Port Edwards. Delegates to the international convention at Springfield, Mass., were given their instructions in resolutions adopted at the Biron meeting. Resolutions expressing appreciation for the courtesies extended by the paper mill owners of Wisconsin Rapids and vicinity were also adopted at this meeting. It is probable the next meeting will be held in Appleton late in October or early in November. A committee to arrange for it was appointed.

The Michigan division of the Superintendents' Association held a meeting May 17 at the Park American Hotel, Kalamazoo, Mich. Some time was devoted at this meeting to consideration of the division's participation in the international gathering being held this week at Springfield, Mass. Following the dinner there were addresses by H. J. Gephardt, president of the H. J. Gephardt Company, Chicago, whose subject was "Steam Losses by Condensation in Cylinders and General Applications, and by J. R. Watson, Engineer of the Gephardt Company, who discussed "Synchronous Motors, Their Control and General Application." Mr. Gephardt pointed out the economical results obtained through use of the Prosser engine. Both addresses were illustrated with a series of comprehensive lantern slides.

A new style sanitary food container which is very much in demand is the Angel positive seal container manufactured by the Angel International Corporation, New York City. This new style liquid container is as feasible as it is efficient. It is made of waxed paper and has a positive seal. This means that once the liquid product has been enclosed by the distributor and the container closed, it remains immune to the contact of germs until it is opened and used by the consumer. The makers of this sanitary container also manufacture machinery for its production. Just now the company is making a drive for a nation-wide use of the product as a substitute for bottles in the distribution of countless liquid products.

With an announcement last week that Chester A. Lyman, sales manager and vice-president of the International Paper Company, will retire from active business, came the statement issued from the International's executive offices in New York, that J. L. Fearing, who has been in charge of the Western sales force will take Mr. Lyman's place in New York. The latter will continue as vice-president of the corporation. Mr. Fearing has been connected with the International Paper Company like Mr. Lyman for a great many years, both having started out with W. H. Parsons & Co., in the late nineties.

For the ensuing half year, the International Paper Company has announced $75 a ton as the contract price for standard newsprint paper from regular newsprint mills. This represents no change from the price in force during the first half of the year. It is understood that present costs of producing paper warrant an advance in prices, but the opinion is expressed that the biggest factors in the production of newsprint are endeavoring to hold prices down to as low a level as possible and do not care to witness a repetition of the runaway markets witnessed in the inflation period of a few years ago.

Burke M. Baxter and Emory C. Prior of Cleveland, O., and Nathan C. Post of Grand Rapids, Mich., are named as incorporators of the Plainfield Paper Company, Chilsdale, Mich., in papers filed with the Michigan Secretary of State. This company, capitalized at $150,000, will engage in the manufacture and sale of paper.

The business of the Thilmany Pulp and Paper Company, Kaukauna, Wis., has been taken over by the American Lakes Pulp and Paper Company which was recently organized and chartered as a Delaware Corporation. The new company has purchased a four-story brick factory building at Waukegan, Ill., for approximately $150,000 and the machinery in the Thilmany company's bag mill at Kaukauna now is being moved to the Illinois city. The transfer will be completed early in June and manufacture of bags in the new location will probably be started in a month. Officers of the new company are: M. A. Wertheimer, president; K. E. Stansbury, vice-president; C. W. Stribey, treasurer; G. J. Stansbury, secretary. C. C. Hockley, Appleton, will be manager of the new plant. Most of the members of the Thilmany company's organization at Kaukauna will be transferred to the Illinois city.

The University of Michigan, in an announcement of the courses in chemical engineering, includes specialized courses in pulp and paper manufacture for graduate students. The pulp and paper group of graduate courses will contain options from the undergraduate course in pulp and paper manufacture and the courses in chemical engineering machinery. The department of chemical engineering has at its head Prof. A. H. White, with whom is associated R. A. Hayward, formerly assistant manager of the Newton Falls Paper Company.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, May 29. Generally speaking, the local paper trade is dull. It has been a week of slow business. Some jobbers point out that the tendency is towards small orders, so far as value is concerned, and more of them. This entails an increased overhead, and of course a cutting of profits. Indeed some orders are of such small monetary value as to involve a loss, when all the necessary charges are reckoned up. It has been urged that salesmen can remedy this condition to a certain extent by tactful suggestion and by inquiries which may lead to the inclusion of other lines in the orders.

Taking a wider view of the commercial situation, business is on a fairly good basis. In April both general imports and exports showed considerable increases. The imports totalled $68,181,320 as against $47,695,454 in the corresponding month in 1922. Exports were valued at $53,642,251 compared with $31,917,500 in April 1922. Both the United Kingdom and the United States were larger buyers of Canadian products during the past month.

There are reports of possible developments in the pulp and paper industry of the Province of Quebec, backed in one instance at least by British capital. If they materialize they will add considerably to the production of the Province. But much will depend upon the investigations which are now being made. The industry will undoubtedly expand, but it is far better that the expansion should be of comparatively slow growth, meeting the natural demands for the production, rather than a substantial addition to the output for which it may be difficult to find an immediate market.

Reports of a pending amalgamation of the St. Maurice Valley companies continue to be published. Nothing official has been given out, but apparently certain negotiations are going on, which may lead to a consolidation of a number of companies or may result in nothing tangible. The main reasons given for such an amalgamation is the saving of overhead expenses by concentrating the management, the pooling of resources, and generally a more economic administration.

In the newsprint section, the most important feature is the announcement of the International Paper Co. that the contract price for standard newsprint for the last half of the present year, will remain at $75.00 a ton. This will, no doubt, set the price for the other companies. For some time there have been reports that the price might be raised to $80.00 per ton in view of the fact that wages and other costs have risen. So far as the Canadian mills are concerned, the general opinion has been in favor of keeping the price at $75.00, on the ground that any increase would upset the market, and would probably result in the curtailing of the demand. In the opinion of the majority of those at the head of the Canadian mills, it is a better policy to have a stabilised market rather than changes in prices which will introduce a disturbing element into the general situation. The announcement by the International Paper Co. is rather out of line with a previous statement of Mr. Dodge, president of the company, who, some time ago, intimated that the price of his company's paper might be advanced to $80.00.

As is well known, Mr. Dodge is in favor of protection for the United States newsprint, and in the absence of that, looks forward to further developments which will give Canada a still greater share of the newsprint industry of the world at the expense of the United States. In this connection, the remarks of Dr. Hugh P. Baker, the secretary of the American Paper & Pulp Association, at Cleveland, Ohio, on May 24 are of interest. He stated that the cost of paper in the United States would increase, owing to higher prices for Canadian pulpwood. He added: "An export tax upon wood from freehold lands, if not a complete embargo upon wood from those lands, is very imminent. Within a year or two Canada will be producing more newsprint than the United States. It is entirely within the bounds of probability for us to look forward to an export tax upon Canadian newsprint as soon as Canada feels that she has that phase of the industry on this continent well within her control."

Dr. Baker insisted upon the necessity of conserving the forest resources of the U. S., particularly by fire protection methods.

With reference to the pulp division, ground wood is selling very freely, with the price firmer. The demand keeps up in a very good way, and any surplus is readily disposed of. Sulphite is moving very slowly, while kraft is in moderate request. Bleached is a strong market, with a very small amount of stock at the mills. The importations of pulp into the United States during January and February indicate the high position of Canada as a source of supply to American mills. Thus in February Canadian bleached imported amounted to 11,756 tons out of a total of 24,679 tons; and for the two months 25,082 tons out of 52,473 tons from all counties. In ground wood, we sent in February 16,631 tons out of 27,766 tons, and for the two months 39,331 tons out of 60,232 tons. In sulphite, the figures are not so good. Our February exports were 22,486 tons out of 57,240, and for the two months 34,558 tons out of 117,994 tons.

Some of the Quebec companies which looked for a delay on the drives owing to the late season report that there has been a decided change for the better, owing to abundant water caused by recent rains. The drives are proceeding very satisfactorily and in some cases will be earlier than last season.

Ontario Market News

The paper market in Ontario is still lagging somewhat and both manufacturers and distributors are complaining of the lack of good-sized orders although in most lines a fair amount of paper is being turned over in small lots. The backward spring undoubtedly has had a deterrent effect on the paper business. The printing trade also is complaining of slackness in business although this is more pronounced in Toronto than it is in other centres in the province. There is, however, a buoyant feeling in both the paper and printing trades and it is generally believed that the present "spotty" condition in these fields may be replaced by activity of a marked character any day now.

As indicating the possibility of an early readjustment of prices in the book paper line one of the leading Ontario manufacturers in that line sent out a circular to the jobbing trade last week dealing with the subject in the following words: "Since October last we have been confronted with a gradual advance in our costs of manufacturing. It has been our hope in the interval that such advances were only of a temporary nature and that particularly raw material would recede to their 1922 level. It is our firm conviction now that we cannot look for a lowering of costs at any near date. Considerable of our sales are quite satisfactory as to quantity, quality and price but there are many instances where either the quantity, quality or price, taken in conjunction, are so unprofitable as to work an injustice to us. For the purpose of endeavoring to remedy these discrepancies we are withdrawing all prices and quotations." This is taken to foreshadow an advance in some lines of book papers and it is possible that other kindred lines of paper may undergo similar treatment.

In conversation with the Pulp and Paper Magazine of Canada, a leading Ontario book paper manufacturer forsaw a big export market for Canadian-made book paper and he predicted that he looked for the time when this country would be exporting nearly as large a percentage of book paper as Canadian-made newsprint is now recording. He pointed out that at the present time twenty-five per cent more book and writing paper is being produced in Canada than during the war years and that with the new mills in operation and others expanding the production is now greater than the consumption. There was no reason, he said, why the Ontario mills should not branch out and go after trade in this line in the American market.

PULP. —The pulp market continues steady with paper mills buying lightly and carrying only small stocks. Generally speaking no advance is looked for and this accounts, to some extent, for the light buying. It is believed that the pulp market will be stable for some time yet and that no decline will take place for some weeks at least. It is taken for granted that if the water conditions remain good for a considerable period the groundwood market may soften some. Groundwood pulp is stationary at from $36 to $37: Bleached $90 to $100: Unbleached sulphite $70 to $80 and newsgrade $65, with little in the market.

TWINE. —Jute twine continues to show a stiffening tendency but other lines remain about the same. In common with paper lines twines have been in light demand of late but the market is looked to to regain its activity very shortly.

KRAFT. —There is no great activity in the kraft market although mills are fairly busy and demand seems to be picking up some. Kraft paper prices remain unchanged at $8.75 in car lots and $9.50 in ton lots for m. f., with 15 c. added for m. g. Kraft pulp is quoted at $72.50.

NEW YORK MARKETS

New York, May 26 — (Special Correspondence) — According to an announcement made this week, the International Paper Company will not advance prices of newsprint paper for the latter half of this year. The announcement issued by the company states that prices will remain unchanged on standard newsprint produced on "regular machines," and many in the trade are trying to figure out whether the intention of the company is to increase prices on paper sold to

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AND

Finnish Wood Pulp Union
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other than regular customers or on any paper manufactured on machines other than those kept constantly on newsprint by the I. P.

The fact that the largest producing company on the Continent will not change prices of newsprint for the balance of the current year prompts members of the trade to expect that other manufacturers will also refrain from advancing quotations. This will mean that the contract price of standard news will be maintained at $75 a ton f.o.b. mills in rolls, which has been the market level thus far this year.

There are no indications of any recession in the consumption of print paper. Instead publishers seem to be using larger quantities than hitherto; certainly, the average newspaper in New York and in most other large cities is printing bigger issues than are ordinarily published at this time of the year. Display advertising is running heavy, and publishers are finding it necessary to put out exceptionally large issues to accommodate all the advertising given them. By way of example, one of the leading local afternoon papers several days ago printed an issue exceeding 50 pages, while a morning newspaper is printing an issue in excess of 40 pages nearly every day of the week.

In connection with fine papers, it is stated that one of the bullish factors now existing in this branch of the market is that jobbers are carrying unusually small stocks of bonds, linens and ledgers, which condition holds true to more or less degree in nearly all other kinds of paper. It appears that paper merchants are still somewhat reluctant to stock up, especially with fine paper. Most of them have not forgotten their experience of several years ago when they were caught with large stocks on a declining market, and the policy in force in a great majority of cases at present is that of keeping inventories down and of buying from mills principally to cover actual orders from consumers. Jobbers in New York frankly say that they are stocking far less paper today than ordinarily; mill men also state that there are indications on every hand that merchants stocks are lighter than has ever been known in recent years.

The significance of this is that the great bulk of fine paper which has been manufactured and shipped by mills during the past few months has moved into consumption. And there is no gainsaying that fine paper manufacturers have been busily engaged. Most mills in the Holyoke district are running at very close to capacity production, and have been for some time; moreover, reports assert that they have a sufficiency of business booked to warrant heavy production for quite some time ahead. The technical position of fine papers therefore is strong, and there seems little probability of excessive stocks serving to weaken the market. The tendency of prices at present is firmly upward, and manufacturers frequently are advancing quotations slightly since raw materials are almost constantly rising in cost.

Book papers are firmly quoted and are meeting with a good demand. A majority of mills are well supplied with orders and are shipping out their product about as quickly as it comes from machines. Consumption of book paper may sag a little during the summer but no signs of any such development have yet been noted, and any loss of consumption during the next several months — if such occurs — will doubtless be made up in the fall, as prospects for increased demand at that time are exceedingly favor-

Wood Pulp Trading Co., Ltd.

501 FIFTH AVENUE,

NEW YORK CITY

WOOD PULP AGENTS

able. Machine finished book is quoted at around 7 cents a pound f.o.b. New York, and coated book is priced by mills at from 9 cents upward. Some grades of machine finished are reported selling at 6.75 cents a pound, though reports state that the bulk of supply moving, particularly to transient buyers, is bringing 7 cents or higher.

Demand for wrapping papers from the West is said to be active though on the whole this class of paper is experiencing comparative quietness at the moment. Stocks, however, are reported light, both at consuming and producing points, and mills are running at a fair rate of capacity and have a considerable volume of orders on file.

Boards are moderately active. If anything, there has been a little broadening of demand lately, and the price tone is firmer than it was several weeks ago. Eastern mills are quoting $62.50 a ton f.o.b. New York on plain chip and $65 a ton on news board, and only in exceptional cases are they shading these prices. Box manufacturers are fairly busy although it is apparent that folding and corrugated boxes are in relatively larger demand than square and oval set-up boxes.

GROUND WOOD. — The main factor which is making for a rather quiet market in mechanical pulp is that most of the important consumers in this country are enabled by favorable water conditions to produce nearly all the pulp they require at present. In fact, a good many manufacturers are themselves sellers to more or less extent, and open market buyers therefore are occasioned little difficulty in locating all the supply that they want. It is stated that consumers in the West are buying in fairly good volume, and indications are that the bulk of the current movement is in that direction. Prices are quotably maintained without any change of note. Domestic grinders ask about $37 to $38 per ton at shipping points for prime spruce ground wood freshly ground and for prompt shipment, and Canadian producers are reported offering spot pulp at down around $33 a ton.

CHEMICAL PULP. —— Prices of chemical wood pulp are holding firm in the face of a rather narrow demand from consuming quarters. Paper manufacturers seem determined to hold off as buyers of pulp until they have received some of the supply they have on order for first open water shipment from Sweden and evidently until they see what effect, if any, the arrivals from abroad have on the market here. It is generally conceded that fairly heavy supplies are due to be received from Scandinavia during the next month or two, since consumers for some time past have placed orders for sizeable amounts for spring shipment. Importers assert, however, that not all the supply that was on order will arrive, owing to the strike in the Swedish pulp industry, and that, if anything, the developments in the near future should serve to strengthen the market here instead of weakening it.

Prime unbleached sulphite of foreign origin is reported selling at from 3.35 to 3.50 cents a pound ex-dock New York or other American Atlantic ports, and Swedish kraft pulp is holding firm at 3.35 to 3.40 cents per pound. Unsold stocks of pulp held on the spot by importers are admittedly small, and sellers consequently can afford to adopt an independent attitude as they are not obliged to push sales. Domestic pulps are moderately active though most of the supply moving is on back orders or contracts. There is a general lull of demand affecting all kinds of chemical pulp but failing to disturb quoted prices.

RAGS. — The papermaking rag market is moving along showing little development of importance. Consumers are buying in a reserved manner. One reason for this is that papermakers look for prices to ease at least a little further as the summer approaches, and another is that the inventory period is drawing near so that mills desire to keep stocks low. Furthermore, as regards the low grades of rags, arrivals from abroad have been so heavy in recent weeks that consumers are well supplied for a time and can well afford to remain out of the market temporarily.

Tenders for Pulpwood and Timber Limit.

Tenders will be received by the undersigned up to and including the 22nd of June, 1923, for the right to cut pulpwood and timber on a certain area situated in the watershed of the Trout and Chapleau Rivers in the districts of Sudbury and Algoma, comprising an area of 1,049 square miles.

Tenderers shall state the amount per cord on pulpwood that they are prepared to pay as a bonus in addition to dues of 80 cents per cord for spruce and 40 cents per cord for other pulpwood, or such other rates as may from time to time be fixed by the Lieutenant-Governor in Council, for the right to operate a Kraft pulp mill and a paper mill.

Tenderers shall also be required to say what they are prepared to pay, per thousand feet Board measure, for the following classes of timber, over and above the upset prices in addition to Crown dues:

Red and White Pine — Upset price	— $6.00 per M. ft. B. M.
Spruce (too large for pulpwood)	— $5.00 per M. ft. B. M.
Jackpine (banksian)	— $2.50 per M. ft. B. M.

The Crown dues on Pine including Jackpine being $2.50 and on Spruce $2.00 per M. ft. B. M., or such other rates as may from time to time be fixed by the Lieutenant-Governor in Council.

The successful tenderer shall be required to erect a mill or mills within the limit or at some point in Ontario approved by the Minister, and to manufacture the wood into Kraft pulp, and also such portion thereof into Kraft paper when required so to do.

Parties making tenders will be required to deposit with their tender a marked cheque, payable to the Honourable the Treasurer of the Province of Ontario, for fifty thousand dollars ($50,000), which amount will be forfeited in the event of the successful tenderer not entering into agreement to carry out conditions, etc.

The said $50,000 shall remain on deposit until the Kraft pulp mill, as provided by terms and conditions of sale, is erected and in operation. Any timber cut in the meantime shall be subject to payment of dues and bonus as accounts for same are rendered. After the said pulp mill is erected and in operation the deposit of $50,000 may be applied on account of bonus dues as they accrue, but the regulation dues as mentioned above shall be paid in the usual manner as returns for cutting of wood and timber are received and accounts rendered.

The highest or any tender not necessarily accepted.

For particulars as to description of territory, capital to be invested, etc., apply to the undersigned.

All tenders should be enclosed in sealed envelopes and marked plainly on outside "Tender for Trout-Chapleau Pulp and Timber Limit."

BENIAH BOWMAN,
Toronto, April 16th, 1923 Minister of Lands and Forests.

N. B. — No unauthorized publication of this notice will be paid for.



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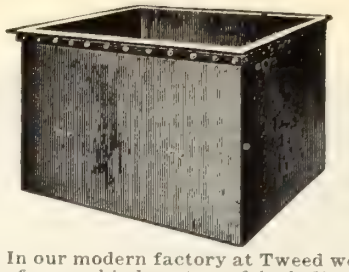
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Buyers who are unable to find in the classification here given such machinery or supplies as they desire are invited to write Service Dept., Pulp and Paper Magazine, Gardenvale, Que., who can, in all probability, refer them to proper sources.

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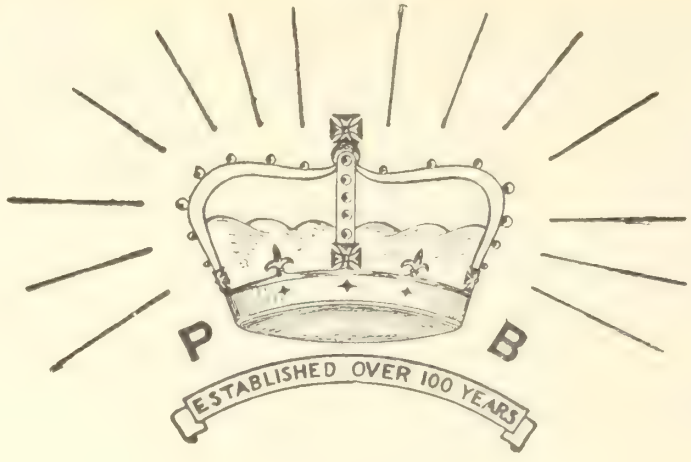
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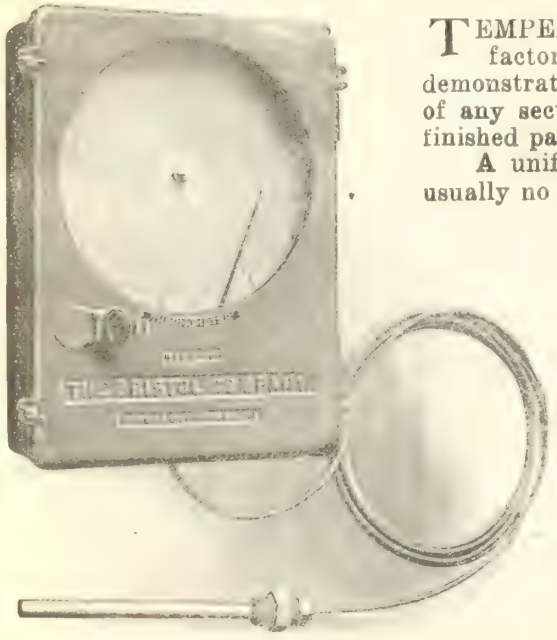
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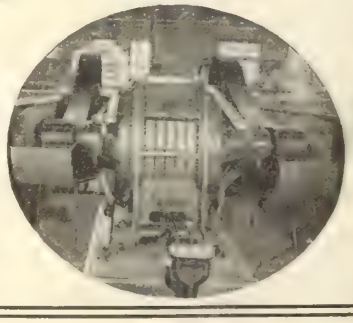


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On right is close up view of Beaters opposite driven by Morse Chains



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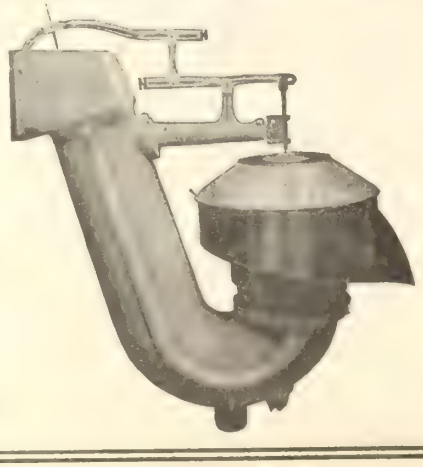
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MILL SUPPLIES. — Continued.

Paper Bags:
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E. B. Eddy Co., Ltd.
Victoria Paper & Twine Co., Ltd

Parchment Paper:
Can. Vegetable Parchment Co., Ltd

Paper Cores:
Elixman Paper Core Co.

Paper Cutting Machines:
Cameron Machine Co.
Walmsley, Charles & Co., Ltd.

Paper and Pulp Machinery.
American Voith Contact Co., Inc
Beloit Iron Works.
Beveridge Supply Co., Ltd.
Bertrams, Ltd.
Black-Clawson Co.
Boving Hydraulic & Eng. Co., Ltd.
Cameron Machine Co.
Canadian Fairbanks-Morse Co., Ltd
Dominion Engineering Works, Ltd
Dowingtown Mfg. Co.
Hamilton Co., Ltd., Wm.
Hydraulic Machinery Co., Ltd.
Johnson Wire Works, Ltd.
Norwood Engineering Co.
Mackinnon Steel Co., Ltd.
McAvity & Sons, Ltd., T.
Mills Works & Machinery, Ltd.
Morrison, J. L. Co.
Port Arthur Shipbuilding Co., Ltd
Pulp and Paper Mill Accessories, Ltd
Pusey & Jones Co.
Sherbrooke Machinery Co., Ltd
Smith Morgan Co.
Stebbins Eng. & Mfg. Co.
Ticonderoga Machine Works.
Walsh Plate & Structural Works, Ltd
Walmsley, Chas & Co.
Waterous Engine Works Co., Ltd
Wesbye, P .P.

Paper Stock:
Pulp & Paper Mill Accessories, Ltd.

Paper Testers:
Canadian Fairbanks-Morse Co., Ltd.
Perkins, B. F. & Son. Inc.
Waterous Engine Works Co., Ltd

Penstocks:
Dominion Engineering Works, Ltd
Horton Steel Works, Ltd.
Hamilton, William Co., Ltd.
Hendrick Manufacturing Co.
MacKinnon Steel Co., Ltd.
Walsh Plate & Structural Works, Ltd
White, W. H.

Penstocks, Wood Stave:
Canadian Pipe Company, Ltd.
Pacific Coast Pipe Co., Ltd.
White W. H.

Pillow Blocks:
Canadian Fairbanks-Morse Co., Ltd
Canadian Link-Belt Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Victoria Foundry Co., Ltd.
Waterous Engine Works Co., Ltd

Pipe — Riveted:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.

Pipe — Wood Stave:
Canadian Pipe Company, Ltd.

Pipes — Brass & Copper:
Tallman Brass & Metal Co., Ltd

Pipes — Steel:
Horton Steel Works, Ltd.

Piping — High Pressure:
Canadian Fairbanks-Morse Co., Ltd
Crane, Ltd.
McAvity & Sons, Ltd., T.
Northern Foundry & Machine Co.

Piping Hydraulic:
Canadian Fairbanks-Morse Co., Ltd
Dodge Manufacturing Co.
Hydraulic Machinery Co., Ltd.

Plate and Tank Works:
Can. Des Moines Steel Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Can. Chicago Bridge & Iron Co., Ltd
Dominion Engineering Works, Ltd.
Goldie & McCulloch Co., Ltd.
Hamilton, William Co., Ltd.
Hendrick Manufacturing Co.
Horton Steel Works, Ltd.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Walsh Plate & Structural Works, Ltd
Waterous Engine Works Co., Ltd

Plates — Calenders:
Norwood Engineering Co.

Pneumatic Collecting and Conveying Systems:
Sturtevant, B. F. Co. of Canada, Ltd

Pneumatic Thickeners:
Sherbrooke Machinery Co., Ltd.
Waterous Engine Works Co., Ltd

Pneumatic Tools:
Canadian Ingersoll-Rand Co., Ltd.

Power Factor Correcting Devices:
Griswold & Co.

Power Condensers:
Griswold & Co.

Presses:
Boving Hydraulic & Eng. Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Hydraulic Machinery Co., Ltd.
Northern Foundry & Machine Co.
Port Arthur Shipbuilding Co., Ltd

Presses — Pulp:
Wm. R. Perrin, Ltd.

Press Rolls:
Bertrams, Ltd.
Dominion Engineering Works, Ltd.
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd
Sherbrooke Machinery C., Ltd.
Waterous Engine Works, Co. Ltd

Pressure Tanks:
Steel Trough & Machine Co., Ltd.

Pulleys:
Boving Hydraulic & Eng. Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Canadian Link-Belt Co., Ltd.
Dominion Engineering Works, Ltd.
Hamilton, William Co., Ltd.
Northern Foundry & Machine Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Victoria Foundry Co., Ltd.
Waterous Engine Works, Co. Ltd.

Pulp Slashers:
Hamilton, William Co., Ltd.

Pulp Stones:
American Stone Co., Inc.
Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
International Pulp Stone. Co.
Lombard & Co.
Miramichi Quarry Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.
Smallwood Stone Co.
Smallwood-Low Stone Co.

Pulp Stone Burrs:
Can. Fairbanks-Morse Co., Ltd.

Pulp Thickeners:
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.

Pulp Wood:
Crittsinger, Burt C.
New Ontario Colonization Co., Ltd.

Pumps:
Bertrams, Ltd.
Boving Hydraulic & Eng. Co., Ltd.
Can. Fairbanks-Morse Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Carthage Machine Co.
Dominion Engineering Works, Ltd.
Downingtown Mfg. Co.
Goldie & McCulloch Co., Ltd.
Goold Shapley & Muir Co., Ltd.
Hydraulic Machinery Co., Ltd.
Hamilton, Wm. Co., Ltd.
Harland Engineering Co., Ltd.
Lawrence Machine Co.
McAvity, T. and Son.
Northern Foundry & Machine Co.
Ontario Wind Engine and Pump Co., Ltd.
Peacock Bros., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Smart-Turner Machine Co., Ltd.
Sherbrooke Machinery C., Ltd.
Victoria Foundry Co., Ltd.
Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co. Ltd.
Weir, Ltd., G. & J.

Pumps — Stock:
Canadian Blower & Forge Co., Ltd
Canadian Fairbanks-Morse Co., Ltd.

Pumps — Boiler Feed:
Canadian Allis-Chalmers, Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Goldie & McCulloch Co., Ltd.
Harland Engineering Co., Ltd.
McAvity, T. and Sons, Ltd.
Northern Foundry & Machine Co., Ltd.

Pyrometers:
The Bristol Co.

Rag Cutter Knives:
Beveridge Supply Co., Ltd.
J. W. Bolton & Sons, Inc.
Pulp & Paper Mill Accessories, Ltd

Rails: — Re-laying:
Canadian Equipment Co., Ltd.
Gartshore. J. J.

Recording Ammeters:
The Bristol Co.

Recording Instruments:
Canadian Fairbanks-Morse Co., Ltd.
The Bristol Co.
Peacock Bros., Ltd.

Recording Wattmeters:
The Bristol Co.

Refiners:
American Voith Contact Co., Inc.
Bertrams, Ltd.
Boving Hydraulic & Eng. Co., Ltd
Can. Fairbanks-Morse Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co. Ltd.

Regulators — Steam.
Beveridge Supply Co., Ltd.
Pickles, W. F.
The Under-Feed Stoker Co. of Canada Limited.

Regulators:
Mills Works & Machinery, Ltd.
The Under-Feed Stoker Co. of Canada Limited.

Reverse Gears:
Canadian Fairbanks-More Co., Ltd.
Russel Brothers.

Rock Drills:
Canadian Ingersoll-Rand Co., Ltd.

Rods — Copper, Brass and Bronze:
Imperial Trading Co.
Tallman Brass & Metal, Ltd.

Rods — Welding:
Tallman Brass & Metal, Ltd.

Roll-Winding Machines:
Cameron Machine Co.
Port Arthur Shipbuilding Co., Ltd.

Roofings — Plastic and Liquid:
Barrett Co., Ltd.
Beveridge Supply Co., Ltd.
Can. Johns-Manville Co., Ltd.
Reed & Co., Ltd., Geo. W.

Rope:
Jones & Glassco.
Goldie & McCulloch Co., Ltd.

Rosin Size:
Hercules Naval Stores
Vera Chemical Co. of Canada, Ltd
Wilson Paterson Co.

Rotary Cutter Knives:
J. W. Bolton & Sons, Inc.
Pulp and Paper Mill Accessories, Ltd

Rotary Sulphur Furnaces:
MacKinnon Steel Co., Ltd.
Stebbins Eng. & Mfg. Co.

Safes:
Can. Fairbanks-Morse Co., Ltd.
Goldie & McCulloch Co., Ltd.

Salt:
The Canadian Salt Co., Ltd.

Salt Cake:
M. Gottesman & Co., Inc.
The Kalbfleisch Corporation

Save-Alls:
Canadian Ingersoll-Rand Co., Ltd.
MacKinnon Steel Co., Ltd.
Pulp and Paper Mill Accessories, Ltd
Port Arthur Shipbuilding Co., Ltd.
Sherbrooke Machinery Co., Ltd.
Waterous Engine Works, Co. Ltd.

Slitters and Rewinders:
Cameron Machine Co.
Port Arthur Shipbuilding Co., Ltd.

Saw Frames:
Can. Fairbanks-Morse Co., Ltd.
Goold Shapley & Muir Co., Ltd.
Ontario Wind Engine and Pump Co Ltd.
Waterous Engine Works, Co., Ltd.

Scales:
Can. Fairbanks-Morse Co., Ltd.
International Bus. Machines Co. Ltd

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Union Screen Plate Co. of Canada
Waterous Engine Works, Co., Ltd.

Screens:
American Voith Contact Co., Inc.
Bertrams, Ltd.
Boving Hydraulic & Eng. Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd
Can. Fairbanks-Morse Co., Ltd.
Can. Link-Belt Co., Ltd.
Hamilton, William Co., Ltd.
Hendrick Manufacturing Co.
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Pulp and Paper Mill Accessories, Ltd.
Sherbrooke Machinery Co., Ltd.
Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co., Ltd
Westbye, P. P.

Separators — Oil:
Canadian Fairbanks-Morse Co., Ltd
Goldie & McCulloch Co., Ltd.

Separators — Steam:
Canadian Fairbanks-Morse Co., Ltd.
Crane Co., Ltd.
Foxboro Co., Inc.
Peacock Bros., Ltd.

Shafting:

Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Northern Foundry & Machine Co., Ltd
Victoria Foundry Co., Ltd.
Waterous Engine Works, Co. Ltd

Sheet Lead:
The Canada Metal Co., Ltd.

Sheets — Copper, Brass and Bronze:

McAvity & Sons, Ltd., T.
Tallman Brass & Metal, Ltd.

Sheet Samplers:
John Date.

Shingle Machines:
Canadian Fairbanks-Morse Co., Ltd.
Victoria Foundry Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.

Shower Pipes:
Dominion Engineering Works, Ltd.
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.

Shredders:

Size:

Vera Chemical Co., Ltd.

Slab Chippers:
Boving Hydraulic & Eng. Co., Ltd.
Waterous Engine Works, Co., Ltd.

Slitters and Re-Winders:
Bertrams, Ltd.
Cameron Machine Co.
Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Langston Co., Samuel M.
Morrison, The J. L. Co.
Ticonderoga Machine Works.
Walmsley, Charles & Co., Ltd.

Slitting and Roll-Winding Machines:
Cameron Machine Co.

Sinks & Tops — Laboratory, Acid Proof:
Alberene Stone Co.

Smelter Lining:
Alberene Stone Co.
Beveridge Supply Co., Ltd.

Smoke Stacks:
Can. Des Moines Steel Co., Ltd.
Dominion Engineering Works, Ltd.
Hamilton Co., Wm.
Hendrick Manufacturing Co.
Horton Steel Works, Ltd.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd
The Steel Trough & Machine Co., Ltd.
Waterous Engine Works, Co., Ltd

Snow Plows:
Canadian Equipment Co., Ltd

Soda Ash:
Wilson, Paterson Co

Soot Cleaners:
Beveridge Supply Co., Ltd.

Solder:

Canada Metal Co.
McAvity T. & Son.
Tallman Brass & Metal, Ltd.

Spiral Conveyors:

Canadian Fairbanks-Morse Co., Ltd.
Can. Link-Belt Co., Ltd.
Waterous Engine Works, Co., Ltd

Splicing Tissue:
Bemis Manufacturing Associates.

Splitters:
Carthage Machine Co.
Hamilton, William Co., Ltd.

Split Pulleys — Wood and Steel:
Canadian Fairbanks-Morse Co., Ltd.
Waterous Engine Works, Co., Ltd.

Sprinkler Tanks:
Can. Des Moines Steel Co., Ltd.
Hendrick Manufacturing Co.
Horton Steel Works, Ltd.

Sprocket:
Canadian Fairbanks-Morse Co., Ltd.
Can. Link-Belt Co., Ltd.
Hamilton Gear & Machine Co.
Hamilton, William Co., Ltd.
Northern Foundry & Machine Co.
Waterous Engine Works, Co., Ltd

Stacks:
Dominion Engineering Works, Ltd.
Hamilton, William Co., Ltd.
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.

Stackers:
Canadian Link-Belt Co., Ltd.

Tanks — Iron and Steel:
Horton Steel Works, Ltd.
MacKinnon Steel Co., Ltd.
Walsh Plate & Structural Works, Ltd
Waterous Engine Works, Co., Ltd.

Steam Appliances:
Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
McAvity, T. and Son.
Pulp & Paper Mill Accessories, Ltd.
Waterous Engine Works, Co., Ltd.

Steam Engines:
Port Arthur Shipbuilding Co., Ltd.
Sturtevant Co. of Canada, Ltd., B. F.
Walmsley, Charles & Co., Ltd.

Steam Regulator:
Beveridge Supply Co., Ltd.
Crane Co., Ltd.
McAvity, T. & Son.

Steam Specialties:
Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Crane Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.
Waterous Engine Works, Co. Ltd.

Steam Shovels:
Canadian Equipment Co., Ltd.

Steel Barrels:
Dominion Engineering Works, Ltd.

Steel Factory Equipment:
Steel Trough & Machine Co., Ltd.

Steel Plate Construction:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.

Steel Storage Tanks:
Steel Trough & Machine Co., Ltd.

Steel Shop Boxes:
Steel Trough & Machine Co., Ltd.

Steam Turbines:
Canadian Fairbanks-Morse Co., Ltd.
Goldie & McCulloch Co., Ltd.
Sturtevant, B. F. Co. of Canada, Ltd

Stokers — Mechanical:
Babcock & Wilcox, Ltd.
The Under-Feed Stoker Co. of Canada, Limited.

Stones — Pulp:
American Stone Co.
Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
International Pulp Stone Co.
Lombard & Co.
Miramichi Quarry Co.
Pulp & Paper Mill Accessories, Ltd
Smallwood Stone Co.
Smallwood-Low Stone Co.

Stoneware — Chemical, Acid-Proof:
Alberene Stone Co.
Beveridge Supply Co., Ltd.

Stop Log Winches:
Dominion Engineering Works, Ltd
Hamilton Co., Wm.
Northern Foundry & Machine Co., Ltd.
Foundry, Ltd.

Strainers — Water:

Can. Link-Belt Co., Ltd.
Babcock & Wilcox, Ltd.

Straw Cutters:
Bertrams, Ltd.

Can. Des Moines Steel Co., Ltd.
Dominion Engineering Works, Ltd.
MacKinnon Steel Co., Ltd.

Structural Steel Works:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.
Walsh Plate & Structural Works, Ltd

Stuff Chests:
Can. Des Moines Steel Co., Ltd.
Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co., Ltd.

Suction Rolls:
Dominion Engineering Works, Ltd.
Hydraulic Machinery Co., Ltd.

Sulphate of Alumina:
H. D. Pochin & Co., Ltd.
Gottesman, M. & Co., Inc.
Imperial Trading Co.
The Kalbfleisch Corporation
Wilson — Paterson Co.

Sulphite Mill Equipment:
Alberene Stone Co.
Beveridge Supply Co., Ltd.
Dominion Engineering Works, Ltd
Hamilton, William Co., Ltd.
Hydraulic Machinery Co., Ltd.
MacKinnon Steel Co., Ltd.
McAvity, T. & Son.
Port Arthur Shipbuilding Co., Ltd.
Walsh Plate & Structural Works, Ltd
Waterous Engine Works, Co., Ltd.

Sulphite Pulp:
Mattagami Pulp & Paper Co., Ltd.

Sulphate Mill Equipment:
Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Hamilton, William Co., Ltd.
MacKinnon Steel Co., Ltd.
McAvity, T. & Son.
Port Arthur Shipbuilding Co., Ltd.
Stebbins Eng. & Mfg. Co.
Texas Gulf Sulphur Co.
Walsh Plate & Structural Works, Ltd.
Waterous Engine Works, Co., Ltd.

Sulphite Mitscherlich:
M. Gottesman & Co.

Sulphur:

Union Sulphur Co.
Texas Gulf Sulphur Company.

Sulphur Burners:

Hydraulic Machinery Co., Ltd.
Carthage Machine Co.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Stebbins Eng. & Mfg. Co.
Walsh Plate & Structural Works, Ltd.
Waterous Engine Works, Co., Ltd.
Walsh Plate & Structural Works, Ltd

Superheaters — Steam:
Babcock & Wilcox, Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Goldie & McCulloch Co., Ltd.

Switchboards:
Canadian Fairbanks-Morse Co., Ltd.
Canadian General Electric Co., Ltd.
Harland Eng. Co., Ltd.
Northern Electric Co., Ltd.

Tanks:
Canadian Ingersoll-Rand Co., Ltd.
Can. Des Moines Steel Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Can. Chicago Bridge & Iron Co., Ltd.
Canadian Pipe Co., Ltd.
Dominion Engineering Works, Ltd.
Goldie & McCulloch Co., Ltd.
Goold Shapley & Muir Co., Ltd.
Hamilton, Wm. Co., Ltd.
Hendrick Manufacturing Co.
Horton Steel Works, Ltd.
Ontario Wind Engine and Pump Co. Ltd.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd
Pacific Coast Pipe Co., Ltd.
Reed Co., Ltd., Geo. W.
The Steel Trough & Machine Co., Ltd.
Toronto Iron Works, Ltd.
Victoria Foundry

Tanks — Acid:
Hendrick Manufacturing Co.
White, W. H.
Walsh Plate & Structural Works, Ltd

Tanks — Elevated — Steel:
Horton Steel Works, Ltd.

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Port Arthur Shipbuilding Co., Ltd.

Tanks — Welded:
Can. Des Moines Steel Co., Ltd.
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.

Tanks — Ore:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.
Smart-Turner Machine Co., Ltd., The
Waterous Engine Works, Co., Ltd.

Tanks — Storage:
Hendrick Manufacturing Co.
Ontario Wind Engine and Pump Co. Ltd.
Port Arthur Shipbuilding Co., Ltd.

Tanks — Wood:
Canadian Pipe Company, Ltd.
Pacific Coast Pipe Co.
Goold, Shapley & Muir Co., Ltd.
Ontario Wind Engine and Pump Co Ltd.
Port Arthur Shipbuilding Co., Ltd.
White, W. H.

Telephone — Automatic:
Northern Electric Co., Ltd.

Telephone — Apparatus:
Northern Electric Co., Ltd.

Temperature Controllers:
The Bristol Co.

Temperature Instruments:
The Bristol Co.
Canadian Fairbanks-Morse Co., Ltd.

Testers — Green Stock:
John Date.

Tanks, Steel, Pressure and Storage.
Hendrick Manufacturing Co.
Horton Steel Works, Ltd.

Timberland Brokers:
Crittsinger, Burt C.
Can. Woodland & Pulp Agency
Lacey, James D. & Co.

Thermometers:
The Bristol Co.
Canadian Fairbanks-Morse Co., Ltd.
Canadian Ingersool-Rand Co., Ltd.

Thrust Bearings:
Canadian Fairbanks-Morse Co., Ltd
Kingsbury Machine Works.

Tissue — Splicing:
Bemis Manufacturing Associates.

Towers:
Horton Steel Works, Ltd.
Hendrick Manufacturing Co.
Walsh Plate & Structural Works, Ltd

Tower Linings:
Beveridge Supply Co., Ltd.
Stebbins Eng. & Mfg. Co.

Transformer:
Northern Electric Co., Ltd.

Transmission Machinery:
Boving Hydraulic & Engineering Co Ltd.
Canadian Fairbanks-Morse Co., Ltd
Can. Link-Belt Co., Ltd.
Hamilton Co., Ltd., Wm.
Port Arthur Shipbuilding Co., Ltd.
Renold of Canada, Ltd., Hans.
Waterous Engine Works, Co., Ltd.

Traps — Steam:
Can. Johns-Manville Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Crane Co., Ltd.
Goldie & McCulloch Co., Ltd.
Sturtevant, B. F. Co. of Canada, Ltd.

Traveling Cranes:
Boving Hydraulic & Eng. Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Smart-Turner Machine Co., Ltd.

Trolleys:
Boving Hydraulic & Eng. Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Northern Crane Works, Ltd.
Smart-Turner Machine Co., Ltd.
Waterous Engine Works, Co., Ltd.

Troughs:
Hendrick Manufacturing Co.

Trucks:
Hamilton Gear & Machine Co.
Canadian Fairbanks-Morse Co., Ltd.
Northern Crane Works, Ltd.

Trucks — Pulp:
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.

Tubes — Copper, Brass, Bronze:
Tallman Brass & Metal, Ltd.
McAvity & Sons, Ltd., T.

Tubes Cleaners:
Babcock & Wilcox, Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.

Turbines:
Boving Hydraulic & Eng. Co., Ltd.
Dominion Engineering Works, Ltd.
Goldie & McCulloch Co., Ltd.
Hamilton Co., Ltd., Wm.
Smith, S. Morgan.
Sturtevant Co. of Canada, Ltd., B. F
Terry Steam Turbines Co.

Twine:
Beveridge Supply Co., Ltd.
Victoria Paper & Twine Co., Ltd.

Valves:
Canadian Fairbanks-Morse Co., Ltd.
Crane Co., Ltd.
Diamond State Fibre Co. of Can., Ltd
Jenkins Bros., Ltd.
Goldie & McCulloch Co., Ltd.
Hydraulic Machinery Co., Ltd.
McAvity T. and Son.
Northern Foundry & Machine Co.
Port Arthur Shipbuilding Co., Ltd.
Smart-Turner Machine Co., Ltd.
The Under-Feed Stoker Co. of Canada, Limited.

Vapor Absorption Systems:
Ross, J. O. Engineering Co.

Vats:
Hendrick Manufacturing Co.
White, W. H.

Ventillators:
Can. Sirocco Co., Ltd.
Reed, Co., Ltd., Geo. W.
Sturtevant Co. of Canada, Ltd., B. F

Warping Machinery:
Russel Brothers

Water Intake Screens:
Canadian Link-Belt Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.

Water Power Plants:
Boving Hydraulic & Eng. Co., Ltd.

Water Supply Systems:
Canadian Fairbanks-Morse Co., Ltd.
Can. Des Moines Steel Co., Ltd.
Goold, Shapley & Muir Co., Ltd.

Water Wheels:
Boving Hydraulic & Eng. Co., Ltd.
Dominion Engineering Works, Ltd.
Hamilton Co., Wm.
McAvity & Sons, Ltd., T.
Northern Foundry & Machine Co., Ltd
Smith, S. Morgan.

Welding Plants:
Canadian Fairbanks-Morse Co., Ltd.

Wire Cloth for Paper Machines:
Christie, Geo., Ltd.
Capital Wire Cloth Mfg. Co., Ltd.
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Niagara Wire Weaving Co.
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ALPHABETICAL LIST OF ADVERTISERS

See Classified List on Page 73.

Unpaged advertisements appear in every other issue

A

Alberene Stone Co., Ltd. 72
Abitibi Power & Paper Co. Ltd. 84
Acer, J. A. H. & Co., Ltd. 74
American Voith Contact Co., Inc. ..
American Stone Co. 24
American Woodpulp Corporation 24
Ayers, Limited 11

B

Babcock & Wilcox, Ltd. .. ..
Barrett Co., Ltd., The .. ..
Barber, W. J. & Co., Ltd. .. .. ..
Bathurst Company, Ltd. 82
Bates & Innes, Ltd. 25
Bemis Manufacturing Association
Bertrams, Limited .. ..
Belgo Paper Co., Ltd., The 82
Beveridge Supply Co., Ltd. .. .. ..
Black-Clawson Co. The .. ..
Bolton, John W. & Sons, Inc. 26
Boving, Hydraulic & Engineering .. 71
Company, Ltd. .. ..
Bristol Co., The 80
Brompton Pulp & Paper Co., Ltd. .. 82
Burgess, E. T. 30

C

Canada Metal Co., Ltd. 19
Cameron Machine Co. 16
Canadian Combustion Co., Ltd. .. 28
Canadian Barker Co. .. ..
Canada Foundries & Forgings, Ltd. 72
Canadian Des Moines Steel Co., Ltd. 16
Canadian Elixman Co., Ltd. 10
Canadian Equipment Co., Ltd. .. .. ..
Canadian Fairbanks-Morse Co., Ltd. 32
Canadian Ingersoll-Rand Co., Ltd. . 5
Canadian Milk Products, Ltd .. .. ..
Canadian Johns-Manville Co., Ltd. ..
Canadian Nashua Paper Co., Ltd. .. 86
Canadian Paperboard Co., Ltd. .. 24
Canadian Link Belt Co., Ltd. ..
Canadian Robert Dollar Co., Ltd. ..
Canadian Pipe Co., Ltd. .. ..
Canadian Sirocco Co., Ltd. .. ..
Canadian S K F Co., Ltd. .. ..
Canadian Vegetable Parchment Co. 71
Limited .. ..
Canadian Westinghouse Co., Ltd. .. 27
Carey, Jas. L. .. ..
Capital Wire Cloth & Mfg Co., Ltd 26
Christie, George, Ltd. .. ..
City of Hull .. ..
Claflin Engineering Co., The 22
Clayton, Neil & Jones, Ltd. .. .. ..
Combustion Engineering Corpora-
tion, Ltd. .. ..
Crane, Ltd. .. ..
Crittsinger, Burt Co., Inc. .. ..
Cleveland Stone Co., The .. ..

D

Date, John 87
Deltcher Brothers .. ..
Dept. of Lands, Forests & Mines, 69
Ontario .. ..
Dodge Mfg. Co. of Canada, Ltd. ..
Dominion Belting Co. .. ..
Dominion Engineering Works, Ltd. 29
Dominion Oxygen Co., Ltd. .. .. ..
Donnacona Paper Co., Ltd., The .. 24
Don Valley Paper Co., Ltd., The .. 24
Downingtown Mfg. Co. 25
Dryden Paper Co., Ltd. 24
Dunlop Tire & Rubber .. ..
Dunham, C. A. Co. 17

E

Elixman Paper Core Co., Inc. 10
Elk Fire Brick Co., of Canada, Ltd. 30
English China Clays, Ltd. 1
Engineering & Machine Works of
Canada, Ltd. .. ..

F

Ferguson, H. S. .. 23
Ford, J. & Co. .. ..
Foundation Co., Ltd 22

G

Galt Knife Co., Ltd. 27
Garden City Paper Mills, Ltd. 74
Geigy Co., Inc. 72
Goldie & McCulloch Co., Ltd. 89
Goold, Shapley & Muir Co., Ltd. .. 26
Gottesman, M. & Co. 29
Grasselli Chemical Co., Ltd., The ..
Graton & Knight MfMg. Co., Ltd. ..
Griswold & Co. 26
Gutta Percha & Rubber, Ltd. 12

H

Hamblet Machine Co. .. ..
Hamilton Gear & Machine Co. 16
Hamilton, Wm. Co. of Canada, Ltd.
Hans Renold of Canada, Ltd. .. .. ..
Hardy, George F. 22
Harland Engineering Co. of Canada,
Limited .. ..
Hay Knife Co., Ltd., Peter .. ..
Hendrick Mfg. Co. .. ..
Hercules Powder Co. 16
Holliday, L. B. & Co., Ltd. 78
Huestis, A. M. 86
Hydraulic Machinery Co., Ltd. 3

I

Ideal Patents Corporation 30
Industrial Engineering Co. Ltd. ..
International Business Machines
Co., Ltd. 22
International Pulp Stone Co., The
Interlake Tissue Mills, Ltd. .. ..

J

Jenkins Brothers, Ltd. .. 10
Jenssen Co., G. D. 23
Johnson Wire Works, Ltd., The 30
Jones & Glassco, Regd. .. 86

K

Kalbfleisch Corporation, The 86
Kander Paper Stock Co., Ltd., The 24
Kenwood Mills, Ltd. 13
Kimball, Herbert S. 23
Kingsbury Machine Works .. ..
Klipstein & Co., Ltd. A. .. ..

L

Lacey, James D. & Co. .. ..
Largeloef Trading Co. 67
Langston, Samuel M. Co. 27
Laurentide Co., Ltd. 84
Lawrence Machine Co. .. ..
Lombard & Co. Inc. 27

M

Management Engineering & Devel-
opment Co., The 23
Mead, Patton & Co., Ltd. .. ..
McAvity, T. & Co., Ltd. 32
McKinnon Steel Co., Ltd. 87
Mills Works & Machinery, Ltd. 80
Miramichi Quarry Co., Ltd., The .. 19
Montabone, J. A. F. .. ..
Montreal Locomotive Works, Ltd. ..
Morrison, J. L. Co. .. ..

N

National Paper Stock Co., The 24
Niagara Wire Weaving Co., Ltd. The 74
Northern Crane Works, Ltd. .. .. ..
Northern Electric Co., Ltd. .. ..
Northern Foundry & Machine Co. ..
Norwood Engineering Co. of Canada,
Limited 26

O

Oliver Continuous Filter Co. .. .. ..
Ontario Wind Engine & Pump Co.,
Limited .. ..

P

Pacific Coast Pipe Co., Ltd. .. .. ..
Patton, Mead & Co., Inc. .. ..
Peacock Brothers, Ltd. .. ..
Penmans Limited 20
Pollack Bros. & Co., Ltd. .. ..
Port Arthur Shipbuilding Co., Ltd. 19
Porritts & Spencer Co, Ltd. .. ..
Price Bros. & Co., Ltd. 76
Price & Pierce, Ltd. 82
Provincial Paper Mills, Ltd. .. .. ..
Pusey & Jones Co., Ltd. 17
Pulp & Paper Trading Co., Ltd. ..
Pulp & Paper Mill Accessories, Ltd. 85

Q

Quarries, C. & M Co. 22

R

Reed, Geo. W. & Co., Ltd .. ..
Relph, Darwen & Pearce .. ..
Rolland Paper Co., Ltd. .. ..
Ross Engineering of Canada Ltd. .. 27
Russell Brothers 72

S

Sadler & Haworth .. ..
Sewall, Jas. W. 22
Sherbrooke Machinery Co. 9
Smallwood Stone Co., The 24
Smallwood Low Stone Co., Ltd. .. 27
Smith Howard Paper Mills, Ltd. .. 78
Spanish River Pulp & Paper Mills,
Limited 86
Steel Trough & Machine Co., Ltd. .. 72
Sterling Electrical Co., ... 22
Stinson-Reeb Builedrs' Supply Co.,
Limited .. ..
Stebbins Engineering & Mfg. Co. .. 18
St. Maurice Paper Co., Ltd. .. ..
Sturtevant Co. of Canada, Ltd. .. 16

T

Tallman, Brass & Metal, Ltd. 74
Taylor, J. A. .. ..
Taylor, H. S., Ltd. 23
Texas Gulf Sulphur Co. .. ..
Ticonderoga Machine Works 18
Tippett & Co., Ltd. 28
Tyler, W. S. Co., The 27
Trimbey Machine Works .. ..

U

Underfeed Stoker Co. of Can., Ltd. 2
Union Screen Plate Co. of Canada,
Limited 87
Union Sulphur Co., The 80
United Wire Works Ltd. 28

V

Vera Chemical Co. of Canada 72
Victoria Foundry Co., Ltd. 21
Voorhees Rubber Mfg., Ltd. 16

W

Wallace, John H. & Co., Ltd. 22
Wardlaw, T. D. & Son 72
Walmsley, Charles & Co., Ltd. .. 14-15
Warren, Kenneth L. 22
Warwick Woollen Mills, Ltd. 28
Watford Engineering Works, Ltd . 7
Waterous Engine Works 90
Wayagamack Pulp and Paper Co.,
Limited 70-71
Weir, G. & J. (Canada), Ltd. .. .. ..
Westbye, P. P. .. ..
White, W. H. 28
Whyte, William 28
Wilson Patterson Co., Ltd. .. ..
Wood Pulp Trading Co., Ltd. 68

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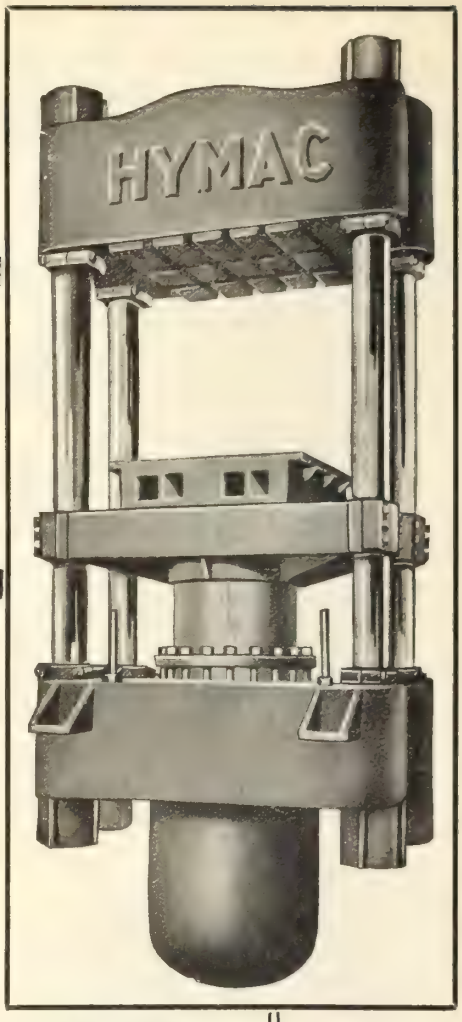
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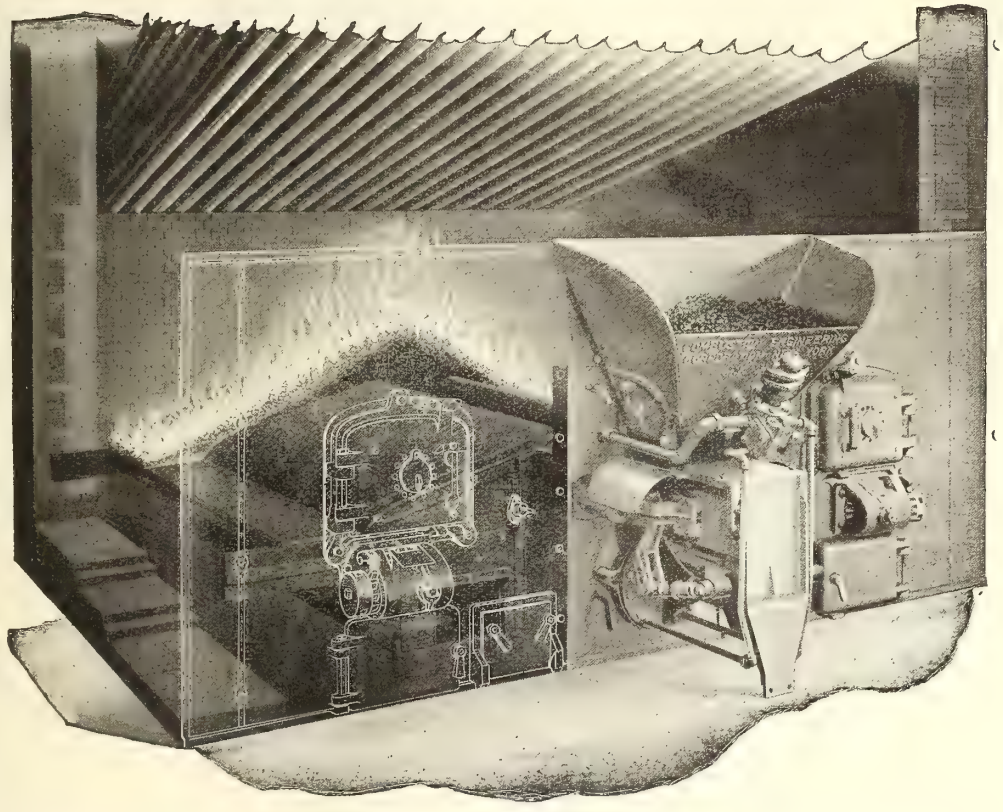
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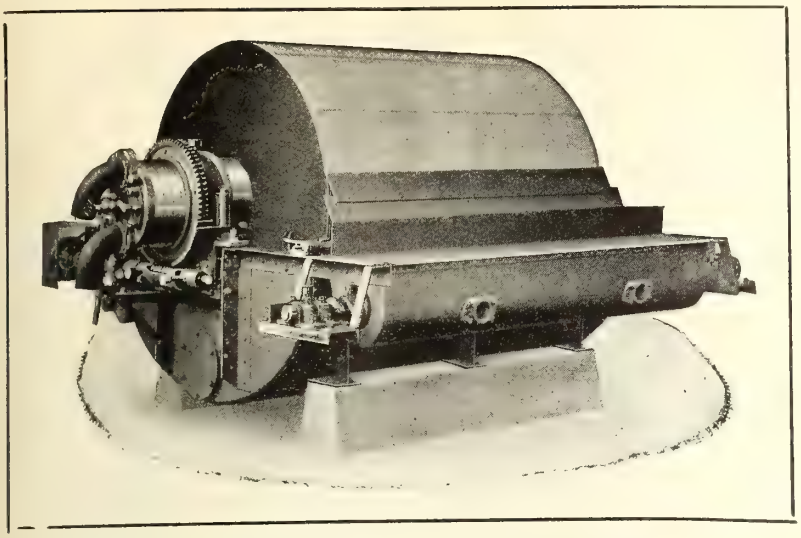
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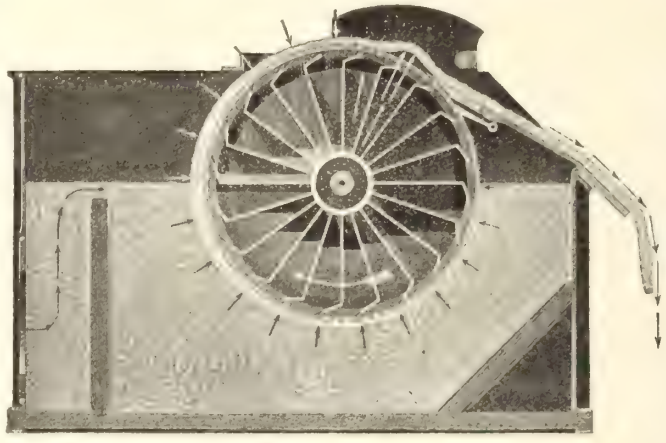
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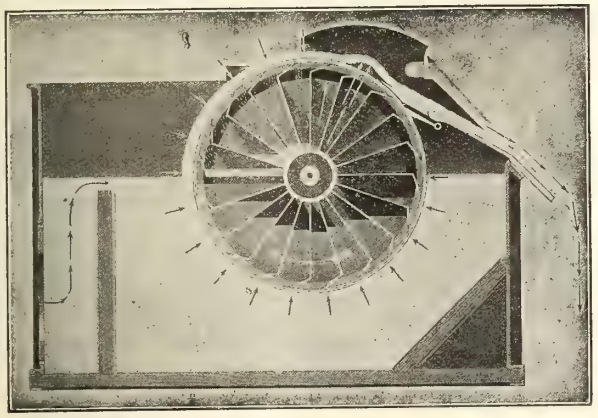


Diagram illustrating Cross Section of Pneumatic Save-All, showing direction of Air Pressures and Formation of Film of Fibres

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(3) He knows that great progress has been made, in his own business, by instituting wise economies — real economies—in management, in production, in the marketing of his product.

(4) And yet he knows that until recently very little progress has been made in preventing the enormous but hidden losses through waste water that is rich in fibre.

(5) He knows all about the schemes that have been exploited and the costs incurred in trying to save this waste, and that as a rule this waste still goes on because the measures tried have not proved capable of preventing it.

(6) Nevertheless, a way exists to save waste fibre successfully. The engraving gives an idea of this way, and we request only the opportunity to tell every mill owner and superintendent all about it.

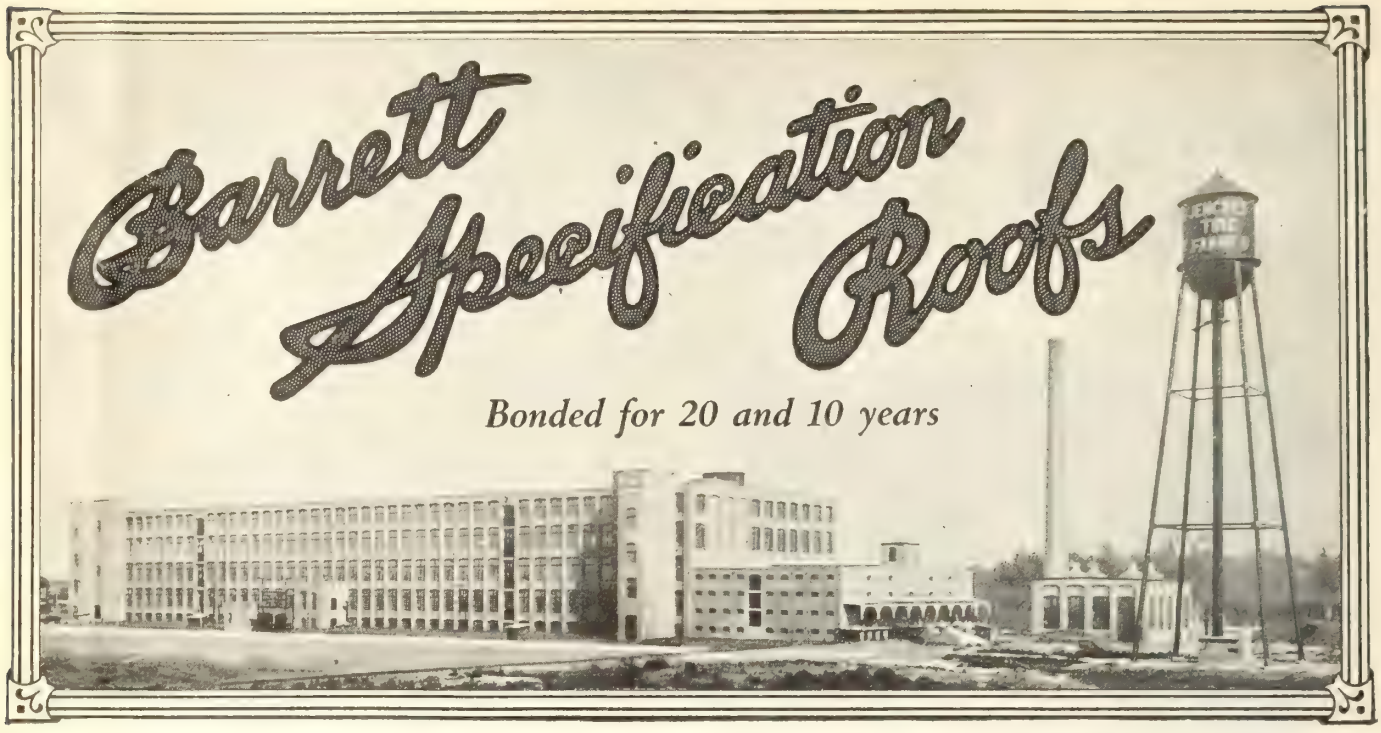
(7) The reason of our success in this line is that we have found the one natural method of catching and holding the fibre as it flows away in the white water, and have applied this method in our Pneumatic Save-All.

(8) In the engraving our Pneumatic Save-All is shown in cross section. Inside the cylinder mould we produce a very slight vacuum, by a blower. The waste water is lightly sucked through the screen and drains away while the fibers are trapped and held upon the outside. They cannot rub off; they cannot slip through; for they are pressed flat upon the screen by air pressure. (See the inwardly pointing arrow heads.) At the top of the circle each section of the cylinder in turn comes under the direct action of the pressure side of the blower, and the film of pulp is lifted off (see the outwardly pointing arrows) onto a deflector. One Save-All and blower take only 5 H.P.; and the same blower, with very little extra power, will serve two Save-Alls.

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After the closest scrutiny of various types of roofs a Barrett Specification Roof was laid. For the architect knew that these roofs not only represent the staunchest and most permanent roof that is possible to construct, but that the owner is guaranteed absolute freedom from all maintenance expense for twenty years at least.

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The experience of hundreds of building owners all over the Dominion proves conclusively that when a roof is built by a reliable roofer according to The Barrett Specification no leaks or other roof troubles will develop during the bonded period. We can give you names and locations of many plants with roofs of this type which have been in service forty years and are still in good condition.

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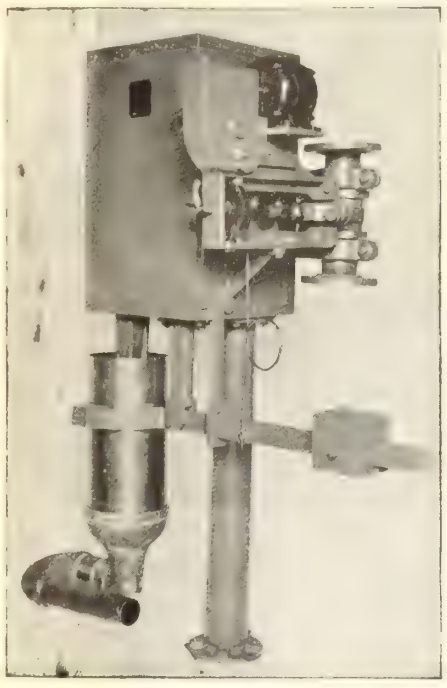
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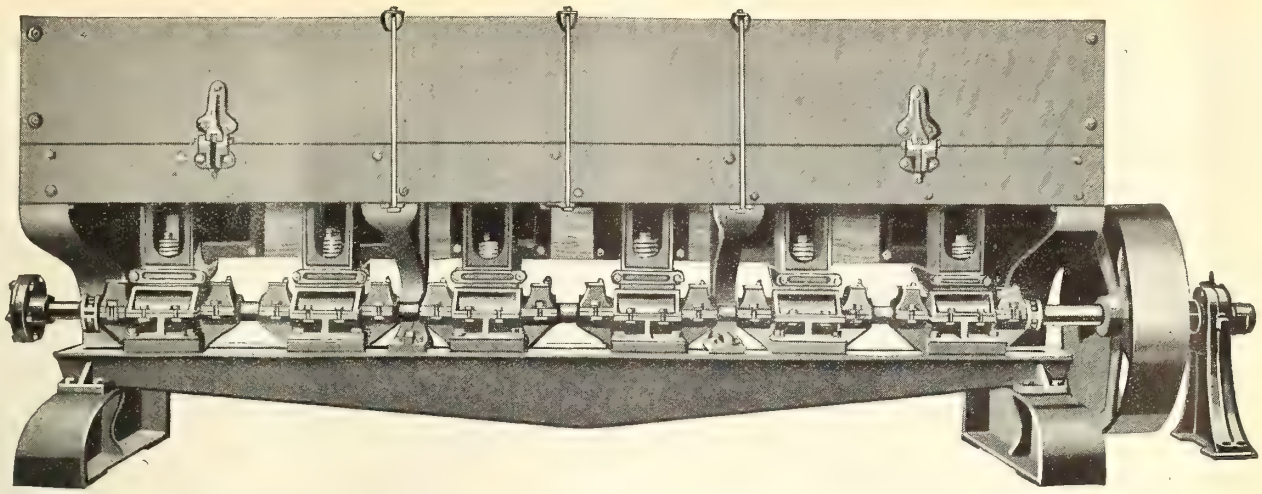
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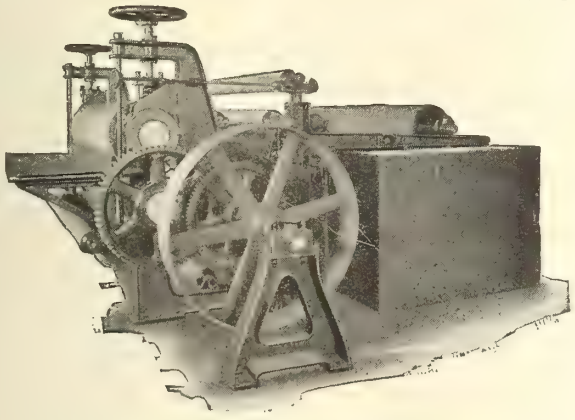
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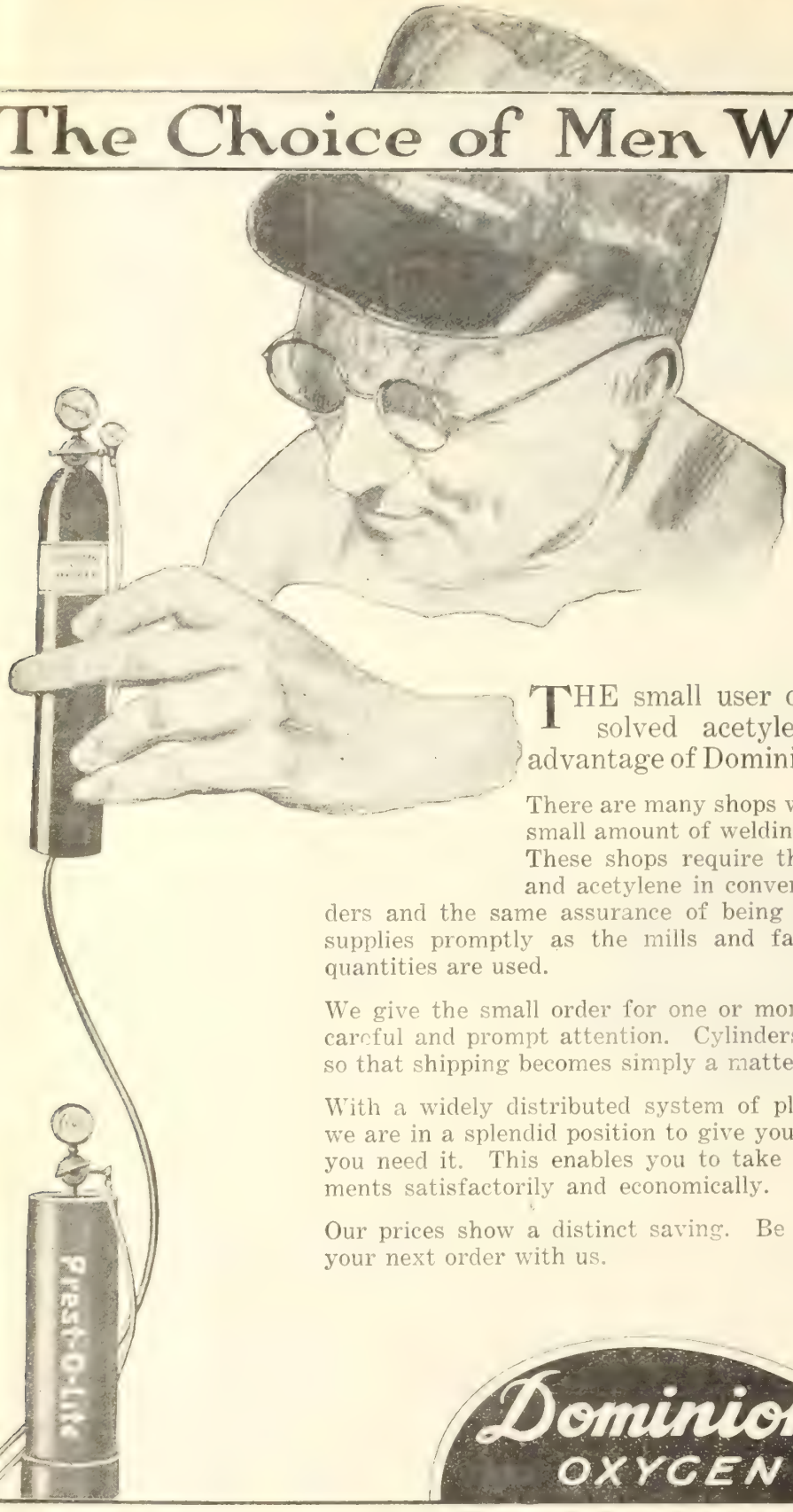


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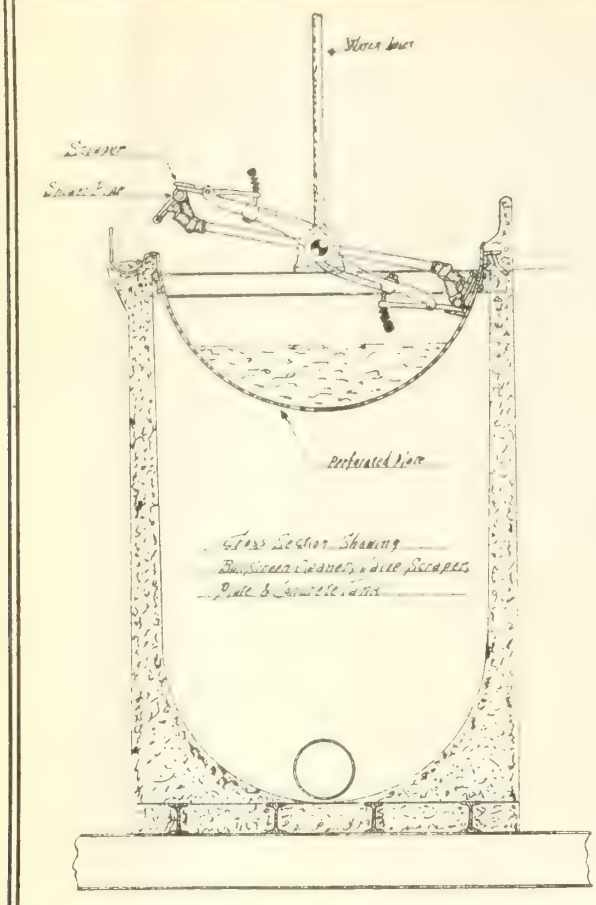
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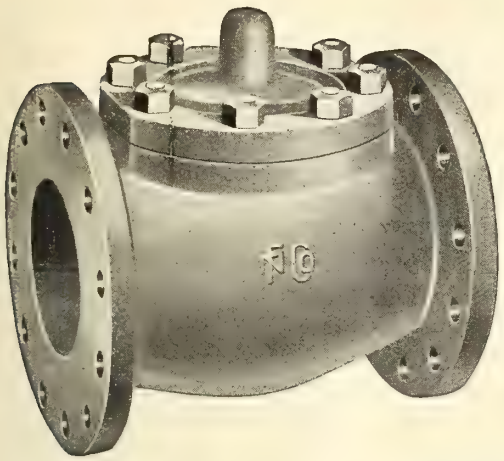
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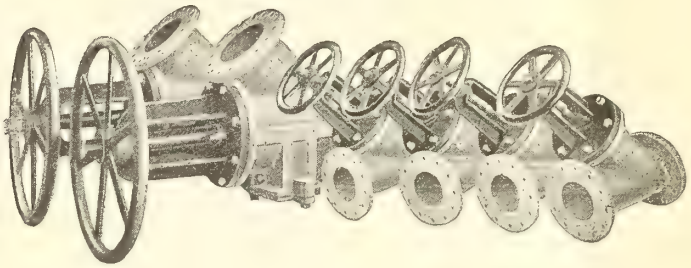
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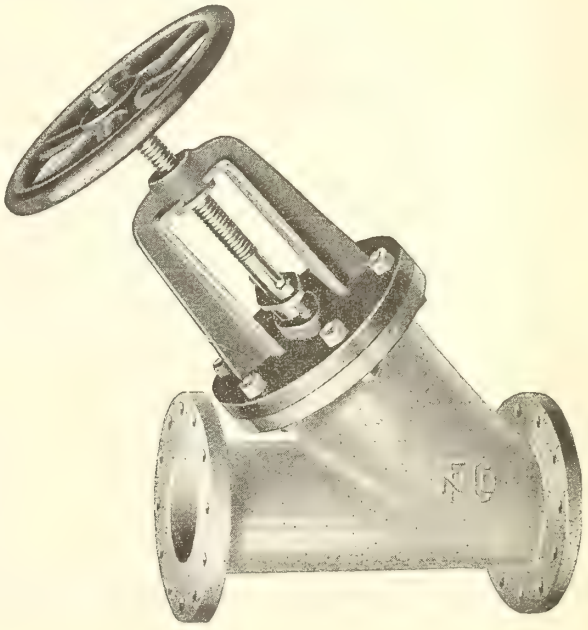
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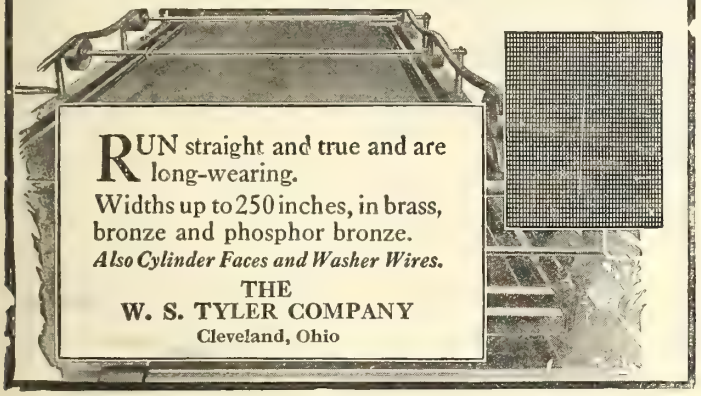
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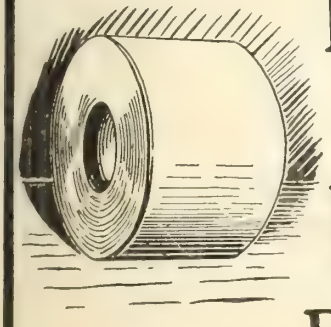
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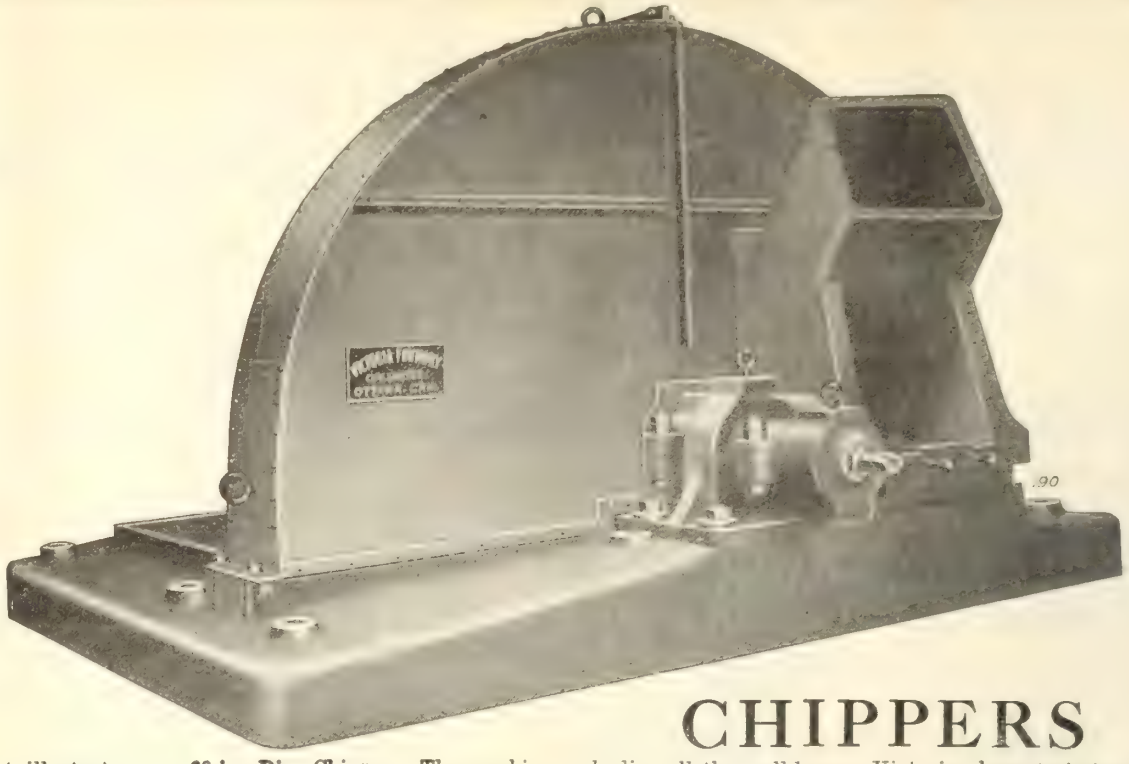


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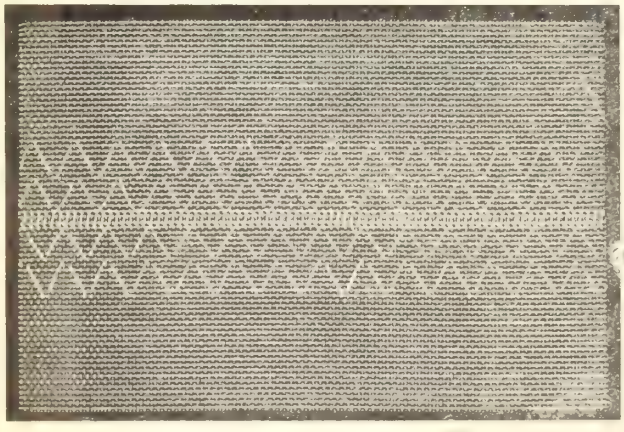
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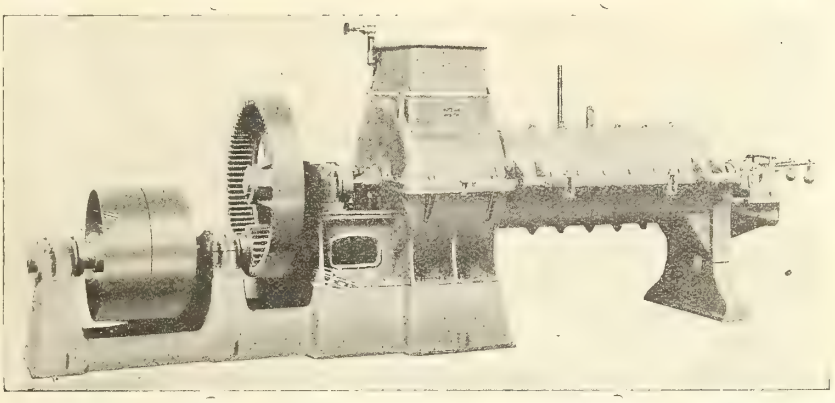
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Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XXI. Gardenvale, Que., June 7, 1923 No. 23

TABLE OF CONTENTS

Editorial:

Montreal in summer 569
In the woods at Ottawa 569
Canada forced to lead in paper production 570

Special Articles:

Annual meeting of American Pulp and Paper Mill Superintendents' Association 571
Variables of wood chips 575
Institute Items 576
Woodlands Section 579
Technical Section 583

Miscellaneous Information:

The organized superintendents 573
The Gospel of Salesmanship 573
Teach girls to make paper hats 573
Prices for publications of A.P. and P.A. . . 576
Trouble with wire seam 576
The joy of gratitude 576
Mill waste turned to use 577
Bibliography of colloid chemistry 578
Is $500,000,000 a year worth saving? 579
Forestry Abstracts 580
Review of recent literature 583
Cash for back numbers 587

News of the Industry:

U. S. Imports of paper increase 574
Newsprint export curbed by tariff 577
Schofield Paper Co. busy 578
Pulpwood was burned 578
Munsey's papers consolidated 578
B. F. Sturtevant goes west 578
Forest policy urged for New York State . . 580
Pulp and paper news 581
United States notes 584
British trade news 585
Wayagamack employees insured 591
Trade Commissioner Egan at Three Rivers 591

The Markets:

Canadian trade conditions 588
New York markets 589

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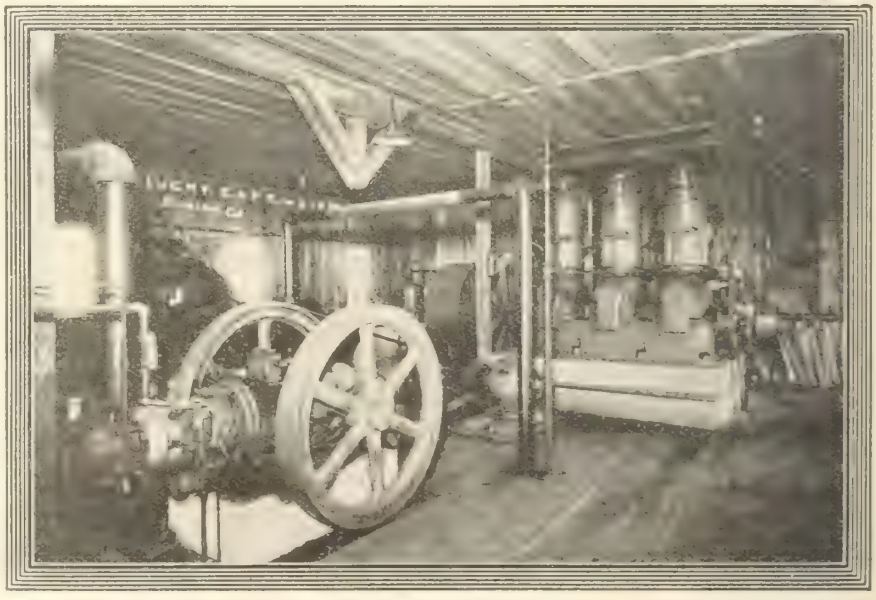
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EDITORIAL

MONTREAL IN SUMMER

Members of the Technical Section have been coming to Montreal in January for many years and we venture to say that few of them realize how beautiful is this metropolis of the Dominion in the summer. Besides the natural beauties of the place, with its tree covered streets, its mountain in the background and the majestic St. Lawrence flowing past its miles of water front, there is probably no place in Canada which offers such a wealth of historic interest and attractive surroundings.

The Pulp and Paper Magazine has in times past had the pleasure of entertaining the executive and committees of the Technical Section but this is the first time the publishers have had the opportunity of extending an invitation to the entire membership to visit their modern printing plant at Ste. Anne de Bellevue, and to hold a business meeting and take lunch nearby at the Senneville Country Club. This invitation is extended for the first day of the summer meeting, Thursday, June 21st. Readers of the magazine have been accustomed to seeing the post mark, "Gardenvale", and when they reach this spot, they will see the reason for so naming the private post office of the Industrial and Educational Publishing Company.

The Section will make headquarters at the Ritz-Carlton Hotel in Montreal and proceed at 9.30, Daylight Saving Time, by motor for Ste. Anne de Bellevue along the shore of the St. Lawrence River and Lake St. Louis. The party will drive through the beautiful grounds of Macdonald College, visit the Garden City Press, the home of the Pulp and Paper Magazine, and then go to the Senneville Country Club where a short business meeting will be held for the reading and discussion of one or two technical papers, after which lunch will be served on the verandah overlooking the Lake of Two Mountains. After luncheon, the party will cross Lake St. Louis in motor launches, furnished by several of the citizens of Ste. Annes and Senneville, to Beauharnois for the purpose of visiting this division of the Howard Smith Paper Mills, Ltd. This is the first time that the Technical Section has had the privilege of visiting a mill manufacturing the very highest grades of paper, and Mr. C. Howard Smith, President of the Company and former President of the Canadian Pulp and Paper Association, will be at the mill to welcome the guests. After visiting this excellent paper manufacturing plant, the party will proceed to Montreal where a complimentary dinner will be served at the Ritz-Carlton Hotel and an evening of entertainment will be provided.

The second day of the meeting will be given up to the visiting of points of interest, either historic or otherwise, in and around the city. The committee is having a hard time selecting the best from the large number of interesting possibilities, so that it is probable that visiting members will be provided with a list of opportunities from which they may select those that appeal most to them.

Further details of the program will be given in the next issue of the Magazine.

One of the most pleasant features of the program, as it is planned by the committee, is arrangements for the entertainment of ladies. In fact the whole program is so laid out at present, that ladies will be interested in every feature of it — except possibly the technical papers to be read at the business meeting. It is urgently requested that all members who think it possible for them to attend to send their names to the Secretary immediately so that proper arrangement can be made for everybody's entertainment.

IN THE WOODS AT OTTAWA

There is some opportunity for doubt as to whether Parliament is in the woods with regard to the forestry situation or whether the Government is merely up a tree. It will be recalled that in his Budget speech, the Minister of Finance stated that Parliament was quite aware of the serious situation with regard to pulpwood supplies for Canadian mills, and that a commission would be appointed to look into the matter. Perhaps in the light of forest fires which are burning pretty generally over the Dominion, we may see something done more promptly than might otherwise be the case.

Nothing good in the way of results can possibly come from fiddling with a situation such as confronts the Dominion at the present time. The danger to the very existence of Canada's largest manufacturing industry has become greatly aggravated in the last half decade, and it is only within the last two years that the public, through the educational efforts of the press and other means, has come to appreciate even a fractional part of the serious results that must follow any further diminution in Canada's forest wealth. Those who have given practically their lives to the study of the matter realize that there is but one solution of the problem — Protect what we have and plant more

trees. This protection and planting must be organized as a definite program by Provincial and Federal Governments. To carry out an adequate program of protection and planting will require funds. Some funds will come from the sale of Crown land wood, but with the continued destruction of the forest by fire and insects and windfall, there inevitably must be a decrease in revenue from this source. Furthermore, it is essential that both parts of the program be inaugurated at once. We realize fully that protection is being provided to some extent, but the means of protection for the forest against fire are notoriously inadequate, and the recent destruction of thousands and thousands of young trees merely emphasizes the necessity of immediate action in providing for the future forests. Additional funds must be provided for the carrying out of these programs. It is appropriate that the growth of the forest should provide as much as possible of the required revenue. Cutting rates could be doubtless increased slightly in most provinces for wood cut on Crown land, but the wood cut on private land is not contributing its share to the cost of maintaining the forest. There are two ways of getting money from this source, one would be a direct tax on standing timber, and the other would be to levy an export tax on pulpwood shipped out of the country.

The Pulp and Paper Magazine strongly recommends an increased expenditure for forest fire protection and that the money for this be provided, first by an export tax on pulpwood shipped out of the country, and second by a slightly increased charge to holders of Crown land cutting licenses. The latter would have the effect not only of providing revenue for this necessary purpose, but at the same time would tend to enhance the domestic demand for pulpwood cut on free hold land, for which the export demand would become more or less curtailed.

CANADA FORCED TO LEAD IN PAPER PRODUCTION

Dr. H. P. Baker, secretary of the American Paper and Pulp Association intimates in a recent speech that Canada is seeking to control the paper industry of this continent. It seems quite likely that Canada will in time dominate the production of paper made from woodpulp, but this situation is being forced on the Dominion rather than being of Canada's own seeking. The situation is one which requires the greatest amount of foresight and careful management. The problem is not one of seeking control by Canada of this important industry, but rather the finding of means whereby the amount of business in the manufacture of pulp and paper which is forced on Canada can be satisfactorily and continuously maintained. The present condition of affairs is due primarily to the American spendthriftiness with regard to natural resources, and in this instance particularly, the resources of forest growth. The effect of promiscuous, careless cutting and destruction of the forests in northeastern United States, and to a considerable extent elsewhere, has had a double effect, first in the direct removal of an enormous amount of raw material immediately required for paper production, and indirectly it has reduced very seriously the flow of streams whose water power has been required for the production of mechanical pulp. The serious and extensive diminution of these two important factors in paper production has caused the entire closing down of some mills and very serious interference with production in many others.

Canada comes very near being in the position of a person presented with a valuable horse and having little or nothing with which to feed it. We are having forced upon us an enormous market with an almost insatiable demand for newsprint, and a growing demand for other grades of paper made from woodpulp, as well as hungry paper mills demanding enormous supplies of woodpulp, and the end of fodder for some of our mills is already in sight. Not only are we very near the end of the continuous production of pulpwood from some areas, but many of our streams whose power has been driving mills are in a deplorable state as regards continuity and uniformity of flow. So serious has this situation become in some of our important pulp and paper manufacturing districts, that the Government has found it necessary to construct at great expense storage reservoirs sufficient to hold back the ever increasing freshet water of the spring in order that productive operations may be maintained during the succeeding dry season.

While we do not agree with Dr. Baker's premise that Canada is seeking to control the newsprint industry of this continent, we do agree with him that the solution of the problem of future newsprint supply lies almost entirely with those who have it in their power to preserve forest lands in a productive state and to protect, while protecting the forests, the water powers on which pulp production depends. By protection of the forest we mean not only the education of the public to the serious results of forest fires, and the need for constant care when in the woods, nor do we mean only the adequate patrolling and sufficient punishment of those who deliberately or through thoughtlessness cause fire in the forests, but we mean a complete forest program which will apportion sufficient wood growing land to a company desiring to manufacture wood into commercial products and to demand that such companies either of themselves or through the Government by the payment of a proper fee maintain this forest land in a productive state. The Canadian policy heretofore has, to a considerable extent, been an encouragement of wanton exploitation of the forests rather than the husbanding of this resource.

Annual Meeting of American Pulp and Paper Mill Superintendents' Association

The Pulp and Paper Magazine of Canada enjoyed immensely the privilege of being a guest at this remarkably successful and jolly gathering.

The word Americans was evidently to be taken in its broadest sense, because the handsome red ribbon and bronze pendant carried the legend "International Convention American Pulp and Paper Mills Superintendents' Association."

Many an old friend of the Couch roll and Calender stack greeted us as we strolled the lobby of the Kimball Hotel, last week at Springfield, Mass., or listened in on the papers and discussions.

The discussions were very frank and the papers short.

The paper maker who doesn't like an argument is a rare bird and probably stayed at home. Time was the only factor in applying the closure and chairman O'Connell, the President of the Association found it hard to shut off the debate at times.

The convention took a whack at politics in passing a resolution memorializing Congress to protest a Canadian embargo on pulpwood, which is considered possible in the near future.

The following account gives only a meagre idea of this interesting convention of an association of great potential value to the industry.

Technical discussions of the various phases of pulp and paper making and a banquet in the Kimball hotel were the features of the first day of the Annual convention of the International Association of American Pulp and Paper Superintendents.

The banquet was for men only and in order that the women might not feel slighted they were treated to a clambake at Riverside park yesterday afternoon. A special car carrying 50 or more wives and daughters of the delegates left at 3.30 and did not return until evening.

Extemporaneous talks were given at the banquet and entertainment was furnished. The banquet was a complimentary one given by the Paper Makers Chemical Company, Buchanan, Bolt & Co, Holyoke Bar Company, B. F. Perkins & Sons. INC., Casper Ranger Construction Company and Walsh's Steam Boiler Works, all of Holyoke.

Technical Subjects Discussed

At the afternoon session L. M. Booth of the Booth Chemical company talked on the Boothal pulp and water saver, which is a chemically balanced dry powder coagulant designed to purify the water used in paper making and gather up the paper-making materials in this water to prevent waste. Mr. Booth was followed by Harold Bing of the Sandusky Foundry and Machine Company, who advocated the use of suction rolls on all Foundrinier paper machines.

R. R. Best of the Western Paper Makers' Chemical Company, discussed the foaming of paper and T. E. Dial of the Vacuum Oil Company pointed out the saving that could be effected by proper lubrication. Several minutes were consumed after the reading of each address in discussion of the subject by delegates. Moving pictures supplied through the courtesy of Price Brothers Ltd., of Quebec, Can., and the Riordon Company Ltd., showed the manufacture of pulp from the time the tree is cut down until it is ready to be made into paper.

Ex-Mayor John J. White of Holyoke, chairman of the arrangements committee, opened the convention with an address of welcome in behalf of the superintendents of the paper industry in Springfield and Holyoke. Mayor Edwin F. Leonard welcomed the delegates in behalf of the citizens of both cities, saying that the selection of Springfield as the convention city befitted the fact that it is located in the heart of the paper industry of the East.

John H. O'Connell of Harrisville, N. Y., president of the association reported that 112 new members were taken in during the last year and three new division associations established, in Chicago, Quebec and Montreal, and the Connecticut Valley association, of which former Mayor White is chairman and J. E. Madore of Holyoke, first vice-chairman.

500 delegates and guests of the convention sat down to the banquet in the Hotel Kimball. This was the closing event of the second day of the convention, and followed sectional meetings and an inspection of Holyoke paper mills. The women accompanying delegates enjoyed the day at Mt. Tom, where luncheon was served.

William F. Whiting, head of the Whiting Paper Company of Holyoke, was the first speaker at the banquet, and after pointing out the cost of Government he stated that the pioneers who founded the United States did so to gain just what Americans are losing today—"freedom of thought and action." He closed with an appeal to the delegates to preserve for future generations what past generations worked to build up for the present day.

Col. B. A. Franklin of Strathmore Paper Co, explained the four principles which make for scientific management, and then he explained that while one of the greatest problems now facing industry is to make labor happy, he believes that this can best be accomplished by friendliness and fair dealing.

National President John H. O'Connor gave the address of welcome at the banquet, and former-Mayor John J. White of Holyoke, chairman of the Connecticut Valley Division of the association, was toastmaster.

Mr. Whiting in his address said that great social and economic changes are under way in the life of

the country, and that this is caused by a struggle to build a new structure on an old foundation by adding organization to organization. A generation ago, he said, the main contact of the individual with the Government was through sheriffs, police or political meetings, but with an increase in industries the American individual is taking more interest in government. The Government itself must keep out of both production and industry, Mr. Whiting said.

Few persons know the cost of government, the speaker asserted, although it had been shown by the industrial conference board and the Federal budget system that a man must work from Jan. 1 to March 1 before he receives anything for himself. The money earned in that time goes to support the Government.

In explaining why he decided to talk on "Scientific Management," Col. Franklin said that he could see "no use in talking about prohibition because we do not have any." He did not want to talk about the World Court, he said, so took the management subject.

Col. Franklin stated that if a manufacturer could divide his force into two groups, management and production, and then collect all of the knowledge his employes had of the manufacture of his product it would be found that collectively they possessed more knowledge than is possessed by the managers. No one individual would, of course, possess all this knowledge. This proves that managers must by consultation and friendliness secure the information possessed by the workers.

Then he said that it should be the function of the superintendents to select the employes who could do a particular operation best. Men selected under the first two principles should then be trained, he said "We are too busy to train our men enough," he said. "There is a tendency to cuss the fellow who does not do his work right, instead of training him in the proper method." As the fourth principle he said that the management does too little work and expects too much from the workmen.

Friendliness and fairness are two principles which he said would make for the best relations with employes.

After a study he said he found that "2,500 years ago they were discussing the same problems which we have today—except prohibition—and these problems will always be with us."

Gatchell's orchestra furnished music and Mrs. Janet Colson Webster, soprano, sang several solos with Mrs. Edythe Snell Gardner as accompanist. Cappucio and Ferrari, girl specialists, entertained with music on the violin and accordion, and were repeatedly encored. The Garden City Trio, comedians, completed the program.

There were three sectional meetings Friday. At the first meeting held in the grill room of the Hotel Kimball, B. T. Larrabee of Cumberland Mills, Me., presided and technical papers on chemical pulp manufacture were read by the following: Theodore Safford of the Racquette River Paper Company of Potsdam, N. Y., on "The Variables of Wood Chips"; O. L Berger of New York city on "Sulphite Mill Control," and Edwin Sutermeister, chief chemist of the S. D. Warren Company of Cumberland, Me. on "Losses in Making Soda Fiber."

At the second sectional meeting of printers and papermakers, Charles B. Porter, secretary of the Connecticut Valley Club of Printing House Craftsmen and superintendent of printing of the Springfield Fire and Marine Insurance Company, spoke on the "Problems of the Printer." His paper outlined the troubles of the printer when the print paper is lumpy or when the ink is not of the right kind. A lengthy discussion followed.

In the afternoon after luncheon the board mill superintendents met with Claude E. Nicely of South Bend, Ind., the presiding chairman. Papers were read by T. B. McBain of Port Edwards, Wis., on "Waste in the Paper Industry," K. T. King of Chicago on "Coloring of Paper," Herman R. Harrigan on "The Beater," and A. W. Nason of Green Bay, Wis., on "The Value of the Save-All." Motion pictures followed this meeting.

Resolutions memorializing Congress to protest against the proposed Canadian embargo on pulp wood to the United States and pledging support to Herbert Hoover and the department of commerce to relieve the present freight congestion on the railroads due to the shortage of cars were passed at the closing sessions of the convention.

Nelson R. Davis of the S. D. Warren company, Cumberland Mills, Me., was unanimously elected president of the association for the coming year, succeeding John H. O'Connell of Harrisville, N. Y., Mr Davis is the first New England man to head the association since the organization five years ago.

Five vice-presidents, representing some of the various district associations, were elected instead of three, an amendment to the by-laws carrying the change into effect. The following were elected, as suggested by the nominating committee, headed by Herbert W. Server, West Carrollton, O.; E. T. Coughlin, Allied Paper mills, Kalamazoo, Mich., first vice-president;Homer Stafford, Knowlton Brothers, Inc., Watertown, N. Y., second vice-president; B. T. McBain, Nekoosa-Edwards Paper Company, Port Edwards, Wis.; third vice-president; William A. Anderson, Kinleith Paper Mills Ltd., St, Catharines, Ont. fourth vice-president; Herbert W. Server, Miami Paper Company, fifth vice-president. Thomas Hogan, Fitchburg, Mass., cast a unanimous ballot for all the candidates.

Peter J. Massey of the William F. Hall Printing Company, Chicago, present treasurer of the association, was elected secretary-treasurer after an hour's debate, during which President O'Connell twice pounded the meeting to order.

Massey was the candidate for the office suggested by the nominating committee. Ex-Mayor John J. White of Holyoke protested that when he left the nominating committee meeting at 1 a.m. only two candidates, Pearl C. Barrett, Kalamazoo, Mich., present secretary, and William McNaughton, New York city, were on the list. Stafford, another member of the committee, verified White's statement.

N. M. Brisbois vehemently resented the inference that part of the committee worked in the dark while the other half slept. Chairman Server explained that Massey was chosen because of President-elect Davis's desire and after opposition developed against both candidates first suggested. The storm subsided. Massey who withdrew his name to allow the president to choose his own secretary, as has been done in the

past, was nominated without opposition and elected by a rising vote.

Watertown, N. Y., made the strongest bid for the convention in 1924. The final decision, however, rests with the executive committee, which in a resolution passed was urged to select a city in which the industry is so developed that delegates may see all the processes of paper and pulp manufacture in operation.

Mills Will Buy Coal Early to Help Railroads

The superintendents, supporting Secretary Hoover, agreed to use their influence in purchasing the winter's coal supply before September 1 to prevent railroad congestion, to load all cars to capacity and not order more cars than are absolutely necessary until the railroads recover from the effects of the war.

Former Mayor White, C. H. Kent of Holyoke and other members of the Connecticut Valley division received a rising vote of thanks for their work in making the convention the most successful in the history of the association. Mayor Edwin F. Leonard, M. M. Marshman and the Chambers of Commerce in Springfield and Holyoke were also praised for their hearty co-operation.

"The greatest compliment was paid the committee by a western delegate, who said that until he came to the convention he believed the East was old and crabby and seldom if ever rallied to a high pitch of enthusiasm," Mr. White said. "But if this was a fair sample of New England spirit, he was all for it."

THE ORGANIZED SUPERINTENDENTS

By B. T. McBAIN

Nekoosa-Edwards Paper Company

A superintendent must not only be boss. He must be more than merely the head of production. He must be an educator. Some one had to teach him. To be sure, he was a willing scholar, but there may be hundreds of willing scholars working in the mills he supervises who would like some day to climb the ladder in their chosen trade.

It is due the superintendent's employer that the knowledge of the Superintendent be disseminated and someone always coming along behind him, capable of taking hold of the wheel and guiding the course of the mill's business, that the Superintendent may be able to say when he is offered a position higher up "Yes, I have a man already instructed in my work and able to carry on."

But the Superintendent must look even farther back in this educational work and see that his assistant also instructs the man below him and so on down the ladder that there may be no hitch or let up in the work when promotion time comes.

Geo. D. McKinnon, President McKinnon Steel Co., Ltd., Sherbrooke, was recently elected vice-chairman, Quebec Division of Canadian Manufacturers' Association.

The mark of a saint is not perfection, but consecration. A saint is not a man without faults, but a man who has given himself without reserve to God.

THE GOSPEL OF SALESMANSHIP

Not to be behind Dr. Fosdick, Dr. Grant, or any of the brilliant religious luminaries who have attracted attention of late by their tendency toward revamping the Scriptures, the Salesmen's Association of the Paper Industry is writing its own Gospel. This Association which was the first big national organization to "rate" an official chaplain, has now begun to build serially a new Gospel of Salesmanship around the Ten Commandments of Salesmanship offered the Association at its annual convention by Dr. Frank Crane.

The new Gospel of Salesmanship will be a symposium of the best thought of the salesmen of the paper industry. In its monthly bulletin to members of the Salesmen's Association, for May, the first of the Ten Commandments offered by Dr. Crane serves as a text for a discussion by H. H. Reynolds, the retiring president of the Association. The other nine commandments will be discussed in turn by other leaders in the sales field of the industry. Following is the first chapter of the New Gospel of Salesmanship.

By H. H. REYNOLDS

"Be Agreeable" reads the first of Dr. Frank Crane's "Ten Commandments of Salesmanship." The command" is so self-evident as almost to seem superfluous. "Any salesman ought to be agreeable," we think. We assent, mentally, to the proposition and then go on to the *next* commandment, without asking ourselves "Are we being really agreeable to our customers — or as agreeable as we ought to be?"

If we are not agreeable to our customers, we have lost the first move in the game of Salesmanship. As in chess, the first bad move may mean the loss of the game.

An agreeable, merry human fellow who comes into the office with a smile and a chuckle, who shakes hands as if he likes you, and makes the world seem a pretty good place after all, is himself the best recommendation for his goods. You know such a chap isn't worrying about his prices or deliveries. He is all *right*. He creates confidence. He makes you feel he is the best possible man to do business with.

The really agreeable man is a man with a clear conscience and an open mind, who is not worrying about himself, and therefore has time to be interested in people and in you.

A mean man is seldom agreeable. He is too selfish.

Salesmanship is getting your customer to agree with your plan or proposition. The first step toward this is to make him feel you are *agreeable* — the kind of chap he can safely agree with. — Sell yourself to him first by being agreeable and you can sell him goods later.

TEACH GIRLS TO MAKE PAPER HATS

"Look at our Mary's new hat. She made it herself and she's only nine next Christmas. It looks worth five dollars and it only cost ten cents." This is the remark which one may expect to hear from many proud mothers in the city's most congested districts during the coming summer, when the handicraft program of the Montreal Parks and Playgrounds Association gets into full swing. Little girls and boys too, whose only holiday resorts are the playgrounds operated by the association are to learn this summer what charming things can be made just out of colored paper.

Paper hats, the very latest from Paris, paper flowers of charming hues and various pretty and useful woven objects are some of the things which the children will learn to make.

U. S. IMPORTS OF PAPER INCREASE

The tremendous increase in the consumption of newsprint paper which has taken place in the United States during the past twelve months and the large increase in the productive capacity of Canadian newsprint mills, have drawn attention to the sources of the newsprint supply upon which such heavy demands are being made.

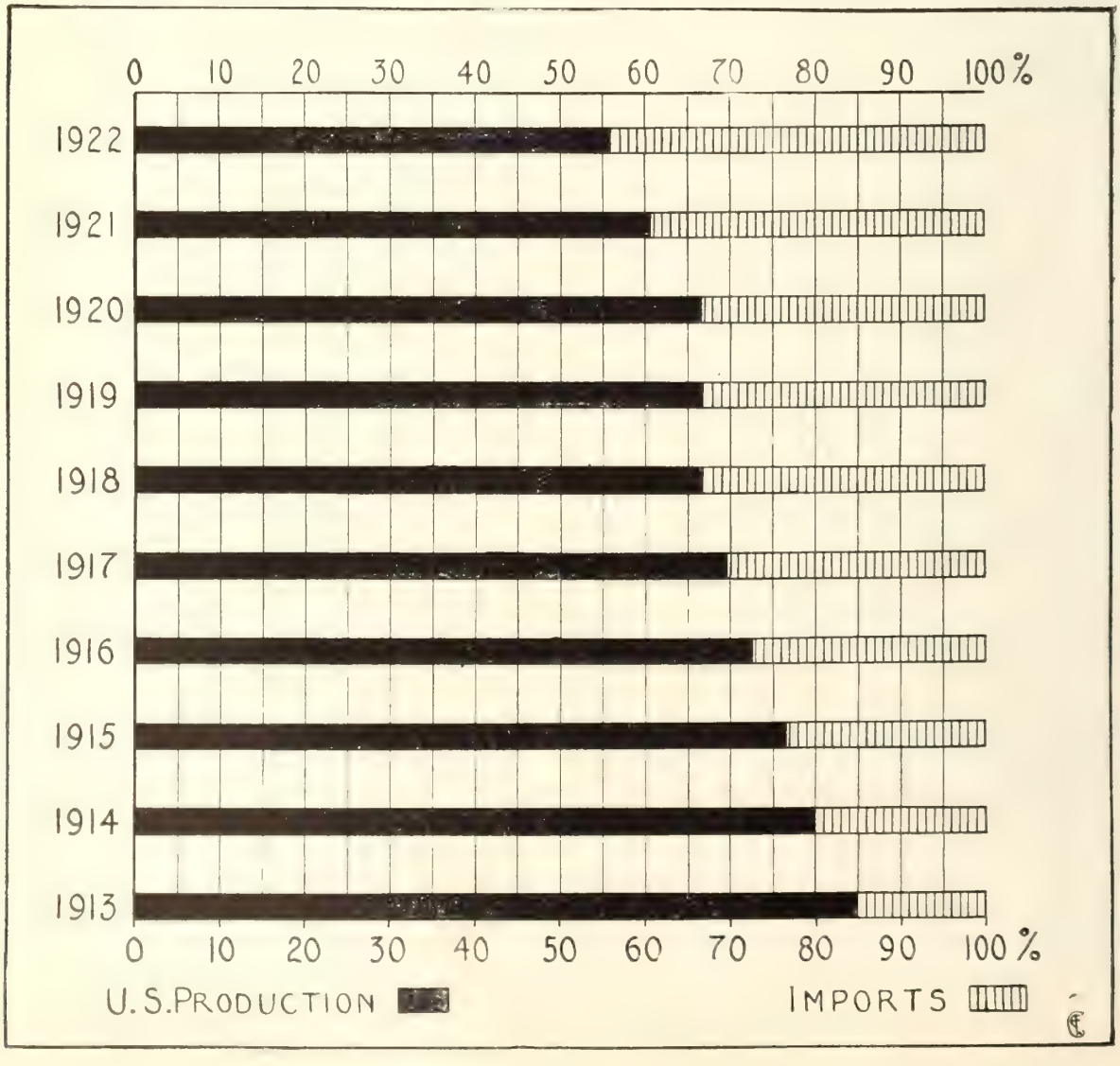
The accompanying chart illustrates the relation between the U. S. domestic production and the importation from other countries. The total supply, consisting of the production of the United States together with the imports, is represented at 100 per cent, and the chart shows how this supply is made up. It will be seen that since 1913 the domestic production has been gradually falling further and further behind the consumption. In 1913 imports formed only 15 per cent of the total supply, while the domestic mills produced 85 per cent of the country's requirements. In 1922 the imports amounted to 44 per cent of the total while domestic mills produced only 56 per cent. During this period the quantity imported rose from 219,601 tons in 1913 to 1,029,266 tons in 1922.

The following table gives the yearly imports and their percentage of the total supply available for consumption:

Year	Imports	P. C. of total
1913	219,601	15
1914	315,475	20
1915	368,409	24
1916	468,230	27
1917	559,113	31
1918	596,270	33
1919	627,559	33
1920	729,866	33
1921	792,481	39
1922	1,209,266	44

While, of course, imports were received from Europe during some of these years, the greater part has been supplied by Canada, and during the war years Canada supplied practically the whole of this paper. In 1919 no imports were received from Europe and with the exception of 3,208 tons from Newfoundland and 41 tons from Mexico, the whole supply came from Canada. European newsprint began to arrive in larger quantities towards the end of 1920 and the total imports of European paper for that year amounted to 49,557 tons. In 1921 European imports increased considerably, the total for the year being 135,629 tons. Last year's imports from Europe were 132,954 tons, only slightly below those for 1921. Imports from Canada have grown very considerably in the last few years. In 1919 Canada supplied 624,479 tons which was equivalent to 99.4 per cent. of the total importation. In 1922 the imports from Canada were 896,312 tons, an increase of almost 44 per cent over the 1919 figures.

The total imports of newsprint into the U. S. A. from all sources in 1922 was over one million tons, being a record high figure. Of the 1,029,266 tons imported, Canada supplied 87 per cent, the remaining 13 per cent being supplied by Sweden, Germany, Finland and Norway in order of tonnage.



The Variables of Wood Chips*

By THEODORE SAFFORD, Racquette River Paper Co.

In any consideration of the problems of preparing chips for chemical pulp manufacture our motives are conspicuously the same as in all process investigation. We all bend our efforts to obtain the highest possible quality at the lowest possible manufacturing cost.

Everyone familiar with wood room operation knows that the quality of product in an otherwise well planned, well installed and carefully operated sulphite mill may suffer serious impairment from a lack of knowledge of the factors influencing the production, and inattention to closely drawn standards of chip size and cleanliness.

The average percentage of cost of sulphite pulp attributable to wood seems to run about 60 per cent. It may be readily seen that an avoidable wood loss of 1 per cent in sawdust means 0.6 per cent avoidable charge for this expensive raw material. Figure that out on your annual tonnage cost and one sees how profitable attention to the wood preparing department may be.

Just when do these losses in quality and cost crop out and where can they be avoided? The vital tool of chip production is, without question, the chipper. There is one and only one place to make good chips and that is in the chipper; beyond that the opportunity is lost and any effort to reduce the oversize chips or spawls results solely in getting them out of sight and into toothpicks and sawdust.

Some common causes of lack of uniformity of product from the chipper are:

1. Worn condition of disc.

2. Face plates which are intended to prevent wear of disc just ahead of knife need renewing.

3. Knives not set to proper gage as regards outward set of cutting edge from disc.

4. Careless placing of shims after poor knife grinding so that cutting edge throughout its length is not at 90 degrees with the axis of rotation of disc.

5. Lack of adjustment of end thrust bearings to run disc as close to bed knife as safety will permit.

6. Bed knife slipping away from disc due to spout base on which it rests being worn out of plane.

7. Intermittent feeding of wood, spout not kept full, allowing sticks to jump badly, causing abnormal sawdust production and spawls when short ends are turned over by revolving knives and cut with the grain.

8. Dull knives.

The angle at which the chipper knives are ground should be determined largely by the condition of the wood, i. e., wet, dry or frozen. The writer's observations on river spruce of about 42 per cent moisture indicate that a double bevel knife of about 42 degrees and 20 degrees makes a minimum of sawdust having a tendency to "draw" the wood with less jumping and retains its cutting edge for the longest service. Knives ground slightly concave are said to reduce power consumption and make little sawdust but have the disadvantage of losing their cutting edge rapidly. The speed of disc is another factor which may have considerable bearing on the sawdust loss. Scandinavian practice seems to tend almost entirely to speeds of less than 200 R. P. M. many mills running as slow as 160 R. P. M. This question is, however, settled in many American mills by the fact that the demand for chips taxes the capacity of chipper installation at speeds of 275 to 350 R. P. M. As an illustration of what careful attention to the points mentioned will do is indicated in Tables 1 and 2, being tests on chips just as they are discharged from beneath the chipper.

		Table 1	2	3
		% by weight		
Retained on	1.050 square mesh	—44.7	53.4	15.8
	0.752 square mesh	—22.9	24.9	39.4
	0.525 square mesh	—17.9	12.6	33.5
	0.263 square mesh	—10.7	7.0	9.5
Thru	0.263 square mesh	— 3.8	1.9	1.8

As will be noted the percentage of the two larger sizes is quite high, this being because the product contained many "cards" or unbroken bundles of the proper length to make perfect chips. This separation is often accomplished by running all the product of the chipper direct to a crusher. However, with a high speed revolving crusher of well known make, this practice was found to increase the portion under ¼" consisting of sawdust and toothpicks to an alarming extent and also in reducing the cards, not to add materially to the percentage of chips of desired size. In order to take the chips directly to a screen which would select the acceptable chips and remove the sawdust, it was found necessary to open up the cards, this being done by a revolving chip breaker attached to the chipper, which reduced a large percentage of the cards without increasing the sawdust content as shown in Table 3.

The oversize chips may then be passed through the crusher and screened either by again passing them over the first screen or, should its capacity be limited, by use of a second screen, whereby chips may be put to the chip bins with little or no sawdust and of proper size for uniform cooking operations.

Gentlemen, it behooves us to look carefully after this too often neglected department of our mills. Inattention to its details can cost quite as much and more than an extra 50 lbs. of sulphur per ton. A well-known authority on pulp mill operation only recently voiced the opinion that the wood room in many mills was treated like the proverbial stepchild. It cannot continue for long to be "anyways to keep the digesters supplied with chips and let the boiler house consume the waste and blind us to its existence." Wood is constantly becoming scarcer and of increasing value.

* Address at Convention of the American Pulp and Paper Mill Superintendents' Association, Springfield, Mass., June 1, 1923.

Canada, with its great forests, is being most thoroughly canvassed with a propaganda calculated to bring about the prohibition of exportation of pulpwood even from fee lands. Our national government is busily formulating a comprehensive forestry conservation program. Let us do our part to make every stick entering our mills yield the utmost in finished product while we still have wood in plentiful supply. Your principals, your employers, view this situation with growing, concern, but it is up to you Superintendents to give this work the attention it deserves. Yours is the final responsibility in this phase of conservation.

That man may last, but never lives, who much receives, but nothing gives; whom none can love, whom none can thank — creation's blot, creation's blank.

PRICES FOR PUBLICATIONS OF A. P. & P. A.

The American Paper and Pulp Association announces the publication of the following pamphlets, which, owing to the demand from non-members for publications of this Association, are only available at cost on application to the offices of the Association.

American Paper and Pulp Association, Special Report No. 8, "Returning Prosperity in the Paper Industry." A compilation of addresses given by manufacturers and merchants of paper as well as by prominent business men outside the paper industry, at the Forty-Sixth Annual Meeting, April 12, 1923, including a discussion of market conditions by Dr. B. M. Anderson, Jr., Economist, Chase National Bank, New York City, and addresses by U. S. Senator Wm. E. Borah, James M. Beck, Solicitor General of the United States and the Rev. Dr. Nehemiah Boynton. Price ..... 25 cents.

Salesmen's Association of the Paper Industry, Special Report No. 6. Addresses before the Annual Meeting, April 1923, including Dr. Warren M. Persons, Economic Research Committee of Harvard University, Lawrence W. Rogers, Professor of Applied Psychology at New York City College, P. T. Dodge, President, International Paper Co., U. S. Senator Pat Harrisson and Dr. H. C. Risner. Price ..... 25 cents.

Woodlands Section Series, No. 3. Proceedings of April, 1923, convention, including recommendations of the Section's forestry committee, covering the application of practical forestry methods in the management and exploitation of timberlands; pulp wood specifications for New York mills, etc. Price ..... 50 cents.

Earlier Publications still available:

American Paper and Pulp Association Special Report No. 7. Addresses and market conditions discussed at the Fall Business Conference, Chicago, October, 1922. Price ..... 25 cents.

Salesmen's Association Special Report No. 5. Addresses delivered at the Fall Business Conference, Chicago, October, 1922. Price ..... 25 cents.

Woodlands Section Series, No. 1. Proceedings of April 1922 Convention, including discussions of many of the practical problems of the wood operations of the paper industry. Price ..... 50 cents.

The attached coupon may be used

Enclosed please find $..... for which please send copies of publications as checked above to the following address:

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INSTITUTE ITEMS

TROUBLE WITH WIRE SEAM

More Answers

Editor.

Pulp and Paper Magazine.

Dear Sir.

With reference to Backtender's question on wire seam of May 24th issue.

If the crush mark appears on the edges only behind the seam it is caused by a sloppy edge, and can be corrected by trimming the wire.

If it occurs right across the seam it is caused by the wire being too slack and can be remedied by tightening the wire.

The seam is the highest and hardest part of the wire, and as it passes under the couch roll, if the wire is too slack, it causes a shifting or doubling over of the stock, and this is the cause of the crush mark.

Yours truly

Backtender.

ANOTHER EXPLANATION

A Machine Tender thinks the cause was packing due to bump as seam passed under dandy — if he had a dandy.

Another says the trouble could be due to the slice being pretty low, and possibly the seam a little heavy. He advised first to remove the filled spots over Sunday by laying a 2″ strip of felt, soaked in kerosene along the seam, until Monday morning, then on taking up the strip, clean out with steam hose. Prevent further trouble by advancing the apron, about ¼ to ½ inch beyond, or ahead of the 1st slice.

The editor of "Questions and Answers" welcomes correspondence on "Troubles". We can't cure them all but we like to help.

THE JOY OF GRATITUDE

He who has learned the habit of gratitude has learned the way to the greatest fullness and rapture of life.

The grateful soul may not be the one to whom life has dealt most bountifully, but the fullness of the heart makes up for any lack.

He who has gratitude is as if he had the best the world could give, for his gratefulness multiplies and magnifies his blessings a thousand-fold; while he who has not gratitude is poor and unhappy with a universe at his feet.

It isn't what we have but how we appreciate what we have that makes life empty or full, gloomy or glad.

The joy and richness that come through gratefulness are no mocking, make-believe things, they are among the most real and abiding possessions of life. And just as we learn that great lesson of gratitude, and yield ourselves to the throb of that finest emotion of the soul, will life take on a steadfast glory and fullness. Gratefulness is always the doorway into real joy. —Ex.

NEWSPRINT EXPORT CURBED BY TARIFF

The volume of Canada's exports of pulp and paper to Australia is dependent upon the present customs tariff of the Commonwealth, which favors the English producer. W. Gorman, who returned to Montreal on Saturday from a six months' trip to the Antipodes, said today: English newsprint enters Australia duty free at present, while the Canadian product pays a duty of £3 per ton, he said. On other grades of paper the English producer is aided by a differential of 10 per cent in duties compared to those imposed on Canadian products.

Mr. Gorman, who represented the Provincial Paper Mills during his trip, said that this 10 per cent differential applied to all grades of paper made by his company, except newsprint.

"It is impossible for Canadian paper to command a broad market in Australia until it enters the country on the same terms as the English product," said Mr. Gorman. "All the Canadian manufacturer asks is equal treatment with the Mother Country. The Australians like us and have no domestic paper industry that might be injured by Canadian competition. I found about 90 per cent of Australians in favor of granting Canada the British preferential. The Federal Government has recently undergone a change in party, and we are hoping that as a result changes will be made in the tariff as it affects Canadian paper.

Sentiment Rules

"Sentiment for the Mother Country is largely responsible for the present tariff, although the English producers buy their pulp from sources outside the Empire, namely, in the Scandinavian countries. The favorable terms that sterling exchange commands in Norway and Finland has resulted in much trade going to those countries. Their pulp is manufactured in Great Britain and exported to Australia under the preferential tariff.

"Thus even with newsprint, which is Canada's leading pulp product, it is difficult to do business with Australia. In New Zealand, however, Canadian paper enters on the same terms as the English product, and the newsprint producers do a fair amount of business there. However, that market is small by comparison with Australia.

"Even if we were on the same footing in Australia with Britain, we would have difficulty in competing with the depreciated currencies of Finland and Norway."

Speaking of general conditions in Australia, Mr. Gorman said that agriculture in the inland districts had been hampered by drought. Along the coast, however, conditions were normal. More wheat is being grown at an average in some places of 28 bushels per acre. Cotton growing is also being experimented with. The only white paper mill operated in Australia has been closed, and there are now only three mills open, which manufacture strawboard, chipboard and kraft. These have a small output.

Asked whether there was a feeling in Australia that Canadian paper mills were the property of United States capital, Mr. Gorman said that this opinion was held in some quarters. While the same thing had been said about Canadian motor car manufactures exported to Australia, Mr. Gorman said that 90 per cent of the cars he saw there were of Canadian and United States manufacture, although the English maker enjoyed a preference. There is only one Australian-made car on the market.

Need U. S. Capital

"When I was asked about the extent to which United States capital was entering Canada", said Mr. Gorman, "I told them that Canada could do with 100 per cent more United States capital. Capital is international, and when it strengthens Canada, it strengthens the Empire."

Mr. Gorman left here for Australia on November 13. He crossed the Pacific both ways on the Niagara of the Canada-Australasia Line, returning to Vancouver on May 26.

MILL WASTE TURNED TO USE

The problem of paper mill waste has been solved by Wm. Tod, junr, & Co, Ltd., of Springfield Paper Mills Potton, Midlothian, who have issued a statement to their shareholders stating that a process has been perfected for making a material which can be used in the place of vulcanite, or, ebonite—and is in some respects superior to either for electrical work.from some of the waste products in the paper mill. The Directors are now considering a scheme for erecting a plant to deal with the new discovery, while tests are being made ad lib.

Brigadier-General J. B. White, of the Riordon Company, Montreal, and Mr. Edward Beck, secretary and manager of the Canadian Pulp and Paper Association, have been appointed a local committee to make arrangements for the reception and entertainment of the Empire Forestry Conference during their visit to Montreal, which is expected to be on July 26. The program will include an inspection of the Forest Products Laboratories, a luncheon, and a tour of the city. The delegates will then entrain for Grand'Mere and other parts of the Province, going as far as Chicoutimi. Local committees are being appointed in various parts of Canada to look after arrangements for entertaining the delegates during their tour of the Dominion, of which the visit to Montreal will form a part. Mr. G. C. Piché is one of the committee for the City of Quebec. The Provincial Government has contributed $7,000 towards the general expenses of the Conference.

The Chicoutimi Pulp Company has sold to Mr. Alexis Tremblay the control of a subsidiary company, the Society d'Eclairage, which operates the electrical service in the Chicoutimi section of the Province.

Our sympathy is with Mr. W. Innis, Montreal representative of the Interlake Tissue Mills Company, Limited, who has received a cable from Scotland announcing the death of his mother.

Mr. W. Gorman, Montreal manager of the Provincial Paper Mills, Limited, has returned to Canada after a long visit to Australia and New Zealand in the interests of his company.

Electric power and light sufficient for a town of 70,000 inhabitants are produced by the machinery of an Atlantic liner of the largest size.

A BIBLIOGRAPHY OF COLLOID CHEMISTRY

By HARRY N. HOLMES

The National Research Council has recently issued a Colloid Bibliography in mimeographed form. The author, Dr. Harry N. Holmes of Oberlin College, Chairman of the National Research Council Committee on the Chemistry of Colloids, intends this edition to be preliminary to a more comprehensive one. Yet it is a book of 135 pages containing 1,800 references on 106 topics. All the references are classified and many are accompanied by brief comment as an aid in deciding on their relative importance. This book may be purchased from the Washington office at $1.00.

Among the classified groups are Absorption, Asphalt, Baking, Biocolloids, Capillary Analysis, Casein, Cellulose and Cellulose Esters, Cements, Clays, and Soils, Cleansing, Coagulation, Dialysis, Emulsions, Filtration, Flotation, Foam, Flour, Fogs, Gels, Gelatin, Glass, Glues, Gold, Gums, Hydration, Indicators, Jellies, Lubricants, Milk, Paints, Peptization, Petroleum, Photography, Protein Swelling, Protection, Rubber, Sewage, Silver, Soap, Sulfides, Surface Tension, Tanning, Ultramicroscope, Viscosity and Water Proofing.

The theoretical and industrial importance of colloid chemistry is now admitted without question. In fact it links together the sciences of chemistry, physics, zoology, botany, geology, medecine, agriculture and even astronomy whenever that science deals with comets' tails. Few are the industries that do not have colloid problems to solve. The average citizen is surprised to learn that his own body is colloidal in composition, that his digestive processes are governed by colloidal rules of action and that the bacteria of disease are of a colloidal degree of dispersion. And he is astonished to learn that but for the colloidal absorption of calcium phosphate from the blood stream by his bony cartilege he would be a mere spineless jelly fish. And as colloid chemistry is surface chemistry, it is of importance to this same average citizen to know that the total surface of his blood corpuscles is about one acre.

Plant and animal tissue is largely colloidal too, and should be studied from that viewpoint.

SCHOFIELD PAPER CO. BUSY

Schofield Paper Co., Ltd., St. John, N.B., have been very busy in their manufacturing department and results for the first four months of the year showed a considerable increase over same months of 1922. They have lately installed a rotary card cutter and rebuilt one of their ruling machines. They are now operating three ruling machines up to capacity and are also able to report good spring business in punching and die cutting lobster can liners from pure vegetable parchment paper.

PULPWOOD WAS BURNED

Chicoutimi, Que., June 4. — Forest fires have been spreading in this district, but fortunately, to date, the damage is not heavy. Yesterday fires extended to Port Alfred and a large quantity of pulp which has been placed on the wharves ready for shipment was destroyed. This fire was a very serious one, and it took several hours on the part of volunteer firemen to prevent the blaze from extending to other sections of the wharves, where more lumber was placed.

B. F. STURTEVANT CO. GOES WEST

The B. F. Sturtevant Company has long felt the need of a manufacturing plant in the middle west.

As almost every installation calls for specific engineering, it has been found difficult and expensive at times, to give full attention to this westward business from Hyde Park; therefore the Sturtevant Company has purchased the plant of the Wisconsin Engine Co., makers of Corliss Pumping Engines at Corliss, Wis.

This new acquisition covers nearly ten acres and the buildings have approximately 150,000 feet of floor space.

A full manufacturing and engineering staff will be maintained and closer co-operation given to western customers. Shipping raw material east and the finished product west, adds a good deal to the ultimate cost because of freight charge. The situation at Corliss, will make a substantial reduction in these additional transportation costs. Shipping facilities are ample.

The new plant will be under the same direction as the other factories at Hyde Park, Galt, San Francisco, and Philadelphia with Ex-Governor Foss as President.

Mr. Harry W. Page has been selected as general manager and will be in entire charge of the Wisconsin plant..

For the past six years, he was assistant general manager and was located at the main office of the B. F. Sturtevant Co., at Hyde Park, Boston, Mass.

MUNSEY'S PAPERS ARE CONSOLIDATED

The Globe and Commercial Advertiser, the oldest daily newspaper in New York, which was recently purchased by Frank A. Munsey, has been consolidated with the Sun. For the present the consolidated newspaper will be known as the "Sun and the Globe." This name will be modified when the amalgamation has been fully established with the public.

The Bridgewater Lumber Company has been formed in Quebec City. A mill is being constructed at St. Foy and will be in operation in a few weeks. The president is Mr. Gerard W. Power, president of the Quebec Harbor Commission, former chairman of the Woodlands Section and a well-known advocate of forest conservation.

The American Society of Mechanical Engineers, during their convention in Montreal last week, visited the plant of the Dominion Engineering Works, Lachine. They inspected all the departments, including the one for papermaking machinery, where they saw the process of machining several dryers, frames, and a Pope reel in connection with a 23 inch newsprint machine ordered by the Belgo Paper Company of Shawinigan Falls.

The St. Regis Paper Co., Ltd., are constructing at Godbout, on the north shore of the St. Lawrence, a plant for the handling of pulpwood. The plant has a capacity of 40,000 to 50,000 cords of pulpwood, and will be equipped with the necessary machinery for cutting and rossing the wood. The wood will come by the Godbout River, and will be transported overland by means of a wooden chute, about a mile and a half to the plant, which is situated on the Godbout harbor. Wharves are being constructed in this harbor to enable the wood to be loaded from the plant into boats.

THE WOODLANDS SECTION

IS $500,000,000 A YEAR WORTH SAVING?

By Dr. CLIFTON D. HOWE,
(Canadian Forestry Magazine)

Dean, Faculty of Forestry, University of Toronto

In the last analysis, adequate fire protection resolves itself down to the question of whether or not the people of this country wish to save their wood-using industries. Let us look into the service of these to the country. The value of the manufactured pulp and paper products is $250,000,000 per annum. The various companies have invested in the business some $375,000,000. They employ 33,000 men in the mills and in the forest, and they pay them each year $40,000,000 in wages. Isn't that business worth saving?

The value of lumber, lath and shingles produced in one year is $150,000,000. Lumber means boards and deals, dimension stock — not the finished product, as in the case of paper. I can't find just how much is added to this value by the various minor wood-using industries. With reservations, I will say that the minor industries, which depend entirely upon wood, produce products to the value of $60,000,000 annually. They have an invested capital of over $50,000,000. They employ 13,000 people and pay annually in wages around $14,000,000. Is it not worth some effort to keep these industries going?

To these should be added the industries that depend in essential part, but not entirely, upon forest products. These, such as the horse-drawn and motor-drawn vehicles, produce each year products valued at $86,553,314. The capital invested totals over $65,000,000. The employees number over 9,000 to whom are paid wages amounting to nearly $12,000,000.

Going back to the lumber industry proper, we find that its invested capital reaches $250,000,000. It employs 55,000 men, and gives them $60,000,000 in wages annually. That business is worth saving, too, is it not?

There are more than 100,000 people in Canada at work converting the forest products into wealth in some form or other. They are chiefly heads of families or the bread winners of families, thus they represent probably a half million people dependent upon the forest for a livelihood. Are they worth while in their work? Are they worth while to the country?

Must Invest in Protection

Let me emphasize that our great pulp and paper companies, the great lumber concerns will not exist many years longer unless there is more effective fire protection. In order to get more effective protection, the public must invest more money in it. When we consider the area actually under license or pulpwood concession, the amount expended on it as a whole, averages less than one cent per acre per year. In other words, we spend less than a cent an acre a year as an insurance rate on forest lands whose supplies at the present day yields us products to the value of $500,000,000 annually.

When we consider the total forest area of Canada capable of producing marketable materials and divide such area into the amount paid for fire protection, then we find we are investing less than one-fifth of one per cent per acre each year to insure the continuance in the future of the second largest wealth producing industry in the country. The amount invested in protecting the supply of our wood-using industries is entirely inadequate. If the people of Canada think it advisable to keep these industries going, they must pay more for forest protection than they are paying at present.

An Erroneous Attitude

A few years ago a government official in charge of the forest fire ranging in his province, in reply to a criticism of the efficiency of his force, made a statement to the newspapers, acknowledging that a certain fire had burned over several townships, but stating that no real damage had been done because no standing timber had been killed, since the townships had already been logged, and much of the area had been burned before. Only non-usable trees, brush, and young growth had been killed, and, therefore, the fire did no harm!

Opinion Dies Hard

This statement reflected a quite general opinion of less than a decade since, and it is quite probable that such opinion may still linger in certain quarters. Its existence, however, has a very logical basis in the development of forest fire protection in Eastern Canada. I believe that it is historically correct to state that fire ranging began with the lumber companies, sometimes voluntarily and sometimes at the instigation of the Government. In all cases the lumberman bore the expense — in Ontario for at least ten years. Then followed a period, extending about twenty years, in which the Government and the lumbermen shared the cost of forest fire protection on a fifty-fifty basis. The modern method is to levy a direct tax upon the lumberman on the basis of a cent to two cents per acre annually. In some provinces, as in Ontario, the lumbermen make recommendations as to the men they wish to serve as fire rangers on their limits, but the actual appointive power lies with the Government; in other provinces, as in New Brunswick, the fire rangers are appointed on the basis of a competitive examination. In case of the lumbermen's associations, the lumbermen pay the major cost, but receive certain contributions from the Government.

Operator's Point of View

Thus, it will be seen that the operator apparently has always paid at least one half and for the greater part of the time the larger portion of the cost of fire ranging upon his limits. He owns only the timber. The land in most cases belongs to the Crown, and the operator pays a small rent for the use of it. When he has taken away all the merchantable timber, he has no more use for the land and it reverts to the

Crown. As a matter of fact, however, there are certain considerations not concerned directly with growing timber that impel the operator to hold on to his cutover lands until the block, berth or limit has been completely exploited. Notwithstanding this, his primary interest is in the merchantable timber of his limit, and, since he pays the greater share of the fire ranging cost, it is perfectly natural and logical that he should desire the green timber to get the whole or major part of the protection; that his interest in the cutover or previously burned areas should be measured by their degree of hazard in relation to his standing timber.

Even at present, I think it safe to say that the greater portion of the fire protection effort goes to the mature forest. From the foresters' standpoint, however, the protection of the cutover and burned-over lands is much more important than the protection of standing timber. There are at least two good reasons for making such a statement. In the first place, if we may judge by the Ontario statistics on a five year average, less than one fifth of the area burned is timberland and one half the area burned has been previously burned. The figures, of course, may be interpreted in two ways, but either substantiates the point I am trying to make. They indicate either that more effective protection is placed upon the standing timber and, therefore, less is burned, or that the standing timber is not as great a hazard and, therefore, does not need as much protection as the areas that have already been burned at least once before.

Must Protect Old Burns

In the second place, although we have no accurate field data on the subject, the areas burned in Eastern Canada undoubtedly greatly surpass in extent the areas containing untouched saw timber and the areas cut and not burned combined. Indeed, it is probable that much more than half of the forested area has been burned within the past 75 years.

Reference to a study of 80,000 acres of burned-over pine lands in central Ontario illustrates this point. On areas burned but once there were 110 young pine trees per acre, burned twice, 14 trees, burned three times, 7 trees and on areas burned many times only three young trees remained on the average acre.

If we supposed that all the 110 trees on the area burned once lived to maturity and all the 80,000 acres to have been burned but once, the value of the final crop in dues and stumpage at the present rate of these would be $3,900,000. However, the area stocked as it is after the repeated fires will be worth at maturity in terms of commercial timber about $900,000. Thus the repeated fires reduced the potential value of these 80,000 acres by a round sum of $3,000,000. That is on 80,000 acres. What is the area of similar conditions in Eastern Canada? We don't know, but we do know that it is enormous. Areas are being repeatedly burned in Ontario at the rate of 100,000 acres a year on a five year average. Young growth is doubtless being killed in a similar proportion in other provinces. We simply cannot endure this, if we are to have a future supply of timber in Canada. Therefore, more adequate protection of areas not at present containing saw-logs is as imperative as it is a patriotic duty.

If anger arise in thy breast, seal up thy lips and let it not go forth. Anger is like a fire, and angry words are like breath to fan it. — Jeremy Taylor.

DEFINITE FORESTRY POLICY URGED FOR NEW YORK STATES

Saranac Lake, May 6. "The cost of wood has now passed the cost of production by reforestation, and the time has now when the state of New York must lay out definite forestry policy, to make possible the utilization of the millions of acres which are now producing little or nothing", said Dr. Hugh P. Baker, executive secretary of the American Paper and Pulp Association, himself a technical forester who for eight years was dean of the New York State College of Forestry at Syracuse, speaking before the Central Adirondack Hotelmen's Association.

"We must face the facts," he added. "Forestry is now an economic problem, and not a sentimental one. These things must be done, if the State is to derive a fair return from its great natural resources:

"We must have a definite program of state and federal co-operation with private land owners.

"There must be an adjustment of taxes to encourage, instead of prevent the reforestation of idle lands.

"The State timber must be used for the common good, to produce the lumber needed by the State, under such proper measures of restriction by the State conservation commission as to protect the forests from devastation.

"Reforestation must be applied on the lands which have been so denuded as to prevent their restocking by natural means.

"It is useless to require the private owner to handle his lands otherwise than is found practicable by the State itself on its own lands. The policy of handling land to secure continuous forest growth must apply equally to private and public lands."

FORESTRY ABSTRACTS

B-9 Pulp and Paper Industry Requires Permanent Forests. GEO. W. MCKEE. **Can. For. Mag.** XVIII. No. 3, (March, 1922, p. 661)—C.L.

B-9 The Value of Young Growth on Cut-Over Land. SWIFT BERRY. **J. For.** XIX No. 8 (Dec. 1921, p. 907). The United States Government has to some extent adopted th epolicy of exchanging National Forest stumpage for cut-over lands in private ownership, as adopted the policy of exchanging National Forest This article discusses the principles to be adopted in arriving at a fair valuation of young forest growth on such cut over lands. Supplementing the article are a number of discussions by other foresters.—C.L.

B-9 Sweden's Royal Road to Prosperity. G. C. PICHE. **Can. For. Mag.** XVIII No. 4, (April, 1922 p. 719). Over one-half the area of Sweden is devoted to productive forests. Professional foresters direct all the lumbering operations, in contrast to the practice, with few exceptions, in Canada and the United States. Logging is generally done by jobbers. Utilization is close, wherever the product can be marketed; cutting is always with a view to future productiveness, and protection from fire is very efficient.—C.L.

B-0 The Effect of Forest on Water Powers. E. SCOTT RIVETT. **Can. For. Mag.** XVIII, No. 4, (April 1922, p. 718). The equalization of the flow of rivers is largely dependent on wooded lands—C.L.

PULP AND PAPER NEWS

The subscribed common stock of the Chicoutimi Pulp Company has been reduced from $4,000,000 to $400,000.

Pulp and paper interests are represented on the executives of the Montreal branch and the Quebec Division of the Canadian Manufacturers' Association. The executive Council of the former include Messrs. Art Harries, of the Canada Paper Box Company, and A. D. Huff of the Riordon Company, while Mr. J. J. Harpell of the Industrial & Educational Publishing Company, Ltd., is on the committee. The executive committee of the Quebec Division includes Messrs. H. C. Price of Price Bros., Quebec, and Jean Rolland, of the Rolland Paper Company, St. Jerome.

In the opinion of the Council of the Montreal Board of Trade the Provincial Government should conduct a wagon road connection between the new Temiskaming-Abitibi district and the terminus of the new line of the C. P. R. at Des Quinzes. This would help develop the pulpwood timber resources of the district.

The James W. Sewall, timber-cruising house of Old Town, Maine and Washington, D. C., reports great activity in their business. Mr. Sewall has crews engaged in work, not only in Maine but in Ontario, Quebec, Nova Scotia, Vermont and New Hampshire, so far this year his cruisers have reported on over a million acres of land, and have work laid out ahead for nearly a million acres more.

Mr. Herbert S. Kimball, Consulting Engineer and Mill Architect, of Boston, was recently honored with the opportunity to deliver a lecture before the sessions and graduate students at the Massachusetts Institute of Technology. His subject was "Some Chemical Engineering Problems in Pulp and Paper Mills".

The Canadian Fairbanks-Morse Company have recently supplied the following equipment to paper mills: One No. 1 Nash pump to the Rowland Ford Paper Co., two No. 6 pumps to the Spanish River Pulp & Paper Co., two No. 8 and one No. 4 pumps to the Donacona Paper Co.

They have supplied to the Donnacona Paper Co. — 32 Fairbanks-Morse Motors for their new extension, and have supplied to the Belgo Paper Co. a 75 H. P. type "Y" Crude Oil Engine for driving wood carrying equipment at Van Bruyzel.

Price Bros. have a new power development in course of construction at Chicoutimi, the total of 10,000 h.p. to be generated, being for use at the company's mill at Kenogami about 10 miles distant from the power site on the Chicoutimi River. As to the type of construction, there is a bulkhead section consisting of a solid gravity wall connecting the power house to the north bank. This section runs up to elevation 105.00. On the south side of the power houses there are five sections of spillway of which the crest elevation is 87.5 and this spillway section supports 6 piers at 18 ft. centres which are carried up above this elevation to support the Tainter gates. The elevation of the tops of the gates is 100 ft., which will be the future water level above the dam. A short section of solid bulkhead type will connect the south end of the spillway to a long wing wall of the Ambursen type which continues upstream to the railway embankment. The top of this wing wall will also be at an elevation 105.00. At the upstream end of this wing wall there will be a shorter section of gravity wall running along the railway embankment on the downstream side. This latter piece is about 90 degrees different in direction from the wing wall.

Mr. G. R. Hall Caine M. P., director of Becker and Co. Ltd., London, England, and of the associated Canadian Companies, is to again visit Canada. This time he will open negotiations with the Federal Government for the construction of 200 miles of railway to open up new country for settlers. In view of the fact that Canada is already over-built, so far as railways are concerned, the chances of obtaining Government aid are not rosy.

Mr. John Stadler, assistant manager of the Belgo Paper Company, Limited, is on a visit to England.

The Canadian Pulp and Paper Association has compiled and issued a bulletin giving particulars of all pulp and paper mills in Canada. It is a very useful and informative pamphlet. The data includes the head offices and mills of the companies, cable address, directors and officers personnel, capitalization, equipment timber supply, production, and proposed extensions, together with any work under construction.

Many in the printing and paper trade in Ontario regretted to learn of the death of John Stovel, head of the Stovel Printing Company, Limited, Winnipeg, Man. Mr. Stovel passed away at Rochester, Minn., following an operation. He was born in Mount Forest, Ont., 65 years ago, became widely known in printing and paper circles in Ontario before he went west. The Stovel Printing Company, Limited, which he founded, is one of the largest businesses of its kind in Canada. The late Mr. Stovel represented Winnipeg in the Legislature in 1921 and 1922 as a Liberal and served with the 90th Winnipeg Regiment during the Riel Rebellion of 1885.

The directors of the Spanish River Pulp and Paper Mills, Limited, held a directors' meeting at Dayton, Ohio, on May 31, where they were the guests of the company's selling agents, the George H. Mead Company. Those who started from Toronto were Col. Thomas Gibson, J. G. Gibson, T. H. Watson, T. W. Sime, Col. Jones and George R. Gray, the latter two coming down from the Sault.

S. A. Armstrong, of the Matagami Pulp and Paper Co., Limited, head office Toronto, has returned to that city after a combined business and pleasure trip to Quebec, during which he spent a few days fishing at the Laurentian Club.

A visitor to Toronto last week was George Hancock, head of the Galt Paper Box Company, with branch at Woodstock, Ont. While in the city Mr. Hancock tried out his prowess at golf with Jack Hewitt of Paper Sales, whose guest he was for a day or two.

A meeting of the directors of the Provincial Paper Mills, Limited, was held at the head office in Toronto last week when routine business was transacted. Directors of the Interlake Tissue Mills, Limited, also held a meeting at their head office in Toronto.

William Gorman, of the Montreal office of the Provincial Paper Mills, Limited, reached Toronto last week on his way back from Australia and New Zealand where he spent some weeks in the interests of his company. When seen by the Pulp and Paper Magazine of Canada Mr. Gorman said that inasmuch as he had just reached Toronto on the homeward stage of his journey he was not prepared to talk of his trip other than to say that he had returned greatly benefited in health.

Charles Syrett, of the Victoria Paper and Twine Company, Toronto, spent a few days of last week in Three Rivers, Que., and other Quebec points.

The many friends in the Niagara District and elsewhere of Lorne H. Gardner, President and General Manager of the Garden City Paper Mills Company, St. Catharines, Ont., were pleased to greet him last week on his return from the Southern States where he has been for some months. Mr. Gardner is very much improved in health and speaks with enthusiasm of the South's curative powers.

The Laurentide Air Service machine "G", with Col. Williams and four men has arrived at Fort William from Ottawa, doing the journey from Sudbury in 3½ hours. The machine and another one which has arrived will be used for patrol work on the Nipigon Reserve, with headquarters at Nipigon Lodge.

That the company's three pulp mills and the two lumber and shingle mills have been operating at capacity for the past six months, and that orders have been booked ahead for several months at a profitable price, were statements made by Hon. T. W. McGarry, President of the Whalen Pulp and Paper Mills, Limited, who is leaving Toronto shortly for the Pacific Coast in connection with the company's business.

Three hundred men will be employed in logging operations at Goulais Bay, in Pennefather township, about twenty-five miles from Sault Ste. Marie, Ont., within the next thirty days, by the Thielman Forest Products Company, whose contract calls for 2,000,000 feet of timber a month for the Ford mills at Lanse, Michigan. The timber of the Pennefather township consists of hardwoods of various kinds, hemlock and pine. Other than the hardwoods the products will go to the Spanish River Pulp and Paper mills.

The death took place in Toronto last week of Mrs. W. J. Douglas, widow of W. J. Douglas, late Managing Director of the Toronto Mail and Empire. Mrs. Douglas was born in the north of Ireland and was the daughter of the late Dr. Riordon, who, after retiring from the service of the British Navy, settled in Weston, Ont. Her husband, the late W. J. Douglas, was Managing Director of the Mail and Empire up until the time of his death in 1919. Her brother, the late John Riordon, the well known paper manufacturer, took over the Mail in 1877, the late Mr. Douglas then becoming identified with the enterprise. Charles Riordon of St. Catharines, Ont., is a brother.

The many friends of Harry C. Wood, Sales Manager of Warwick Brothers & Rutter, manufacturing stationers, Toronto, will regret to learn that he has been confined to his bed for some days with illness contracted while on a visit to Atlantic City.

A. P. Costigane, Secretary-Engineer of the Ontario Pulp and Paper Manufacturers' Safety Association, Toronto, spent several days last week visiting the paper mills in the Niagara district.

By a typographical error in the last issue of the Pulp and Paper Magazine of Canada in the article dealing with the presentation of the Safety trophy to the Georgetown mill of the Provincial Paper Mills, Limited, the time lost per full time worker was given as 8.5 instead of .875 days lost time per full time worker.

Arthur Jewitt, of the Montreal office, of the Provincial Paper Mills, Limited, was a visitor at the head office of the company in Toronto last week.

C. Howard Smith, head of the Howard Smith Paper Company, and First Vice-President of the Canadian Manufacturers Association, is down on the program of the annual convention of the latter organization which will be held in Toronto on June 11 when the well-known paper maker will tell of his journey last winter through Australia, New Zealand, China and Japan.

Bradshaw's, Limited, of Toronto, manufacturers of waxed paper, have just completed the purchase of a tract of land consisting of one and a half acres from the Bateman-Wilkinson Company. The property faces Symington Avenue and borders on the Canadian Pacific Railway. Active construction has started on a new building which is to be of concrete construction. The building will be 216 feet long, with one story, and of mezzanine floor type. The latest improvements and equipment known to the waxed paper business will be embodied in the building which should give the Bradshaw Company a premier standing among the waxed paper mills operating in this country. To facilitate the handling of carload freight a railway siding has been laid the full width of the building. Such features as a cafeteria and recreation rooms are being installed for the welfare of the employees. W. J. Trimble, the well known paper mill contractor, is in charge of construction and the Bradshaw Company hope to be in their new premises by Sept. 1. The Company also announce that they have just opened a sales office in Montreal in charge of W. J. Bradshaw.

The Dominion Embossing and Printing Company, Limited, Jarvis Street, Toronto, is asking for a readjustment of accounts with their creditors and have offered a compromise which will be considered at a meeting of creditors. The list of creditors includes most of the larger paper jobbing houses in Toronto, one of them having a claim for over $2,000. The liabilities are placed at $42,625.44, with nominal assets of $45,500.

Rag and waste paper dealers in Toronto are endeavoring to get the Board of Education in that city to rescind the regulation recently adopted prohibiting the scholars from collecting waste paper in the schools for school or other funds.

Mr. G. Piché, chief forester of the Province of Quebec, was a visitor to Montreal last week. Mr. C. Small, of the Laurentide Company, Grand'Mere, was also in Montreal.

C. Walmsley & Co., Ltd., Bury, England, have obtained an order for a newsprint machine for A-S Follum Traesliberi, Honefos, Norway. The machine will be equipped with a Lloyd-Hutchison drive, the engine being of the enclosed high speed Walmsley type. The machine will be the largest in Scandinavia, giving 215" of finished trimmed paper. It will run at 800 feet per minute, producing 80 tons per day.

Technical Section

REVIEW OF RECENT LITERATURE

C.—Wood Preparing and Equipment

C-0 Handling of Wood Room Equipment. FRANK J. CARROLL. Paper Ind. iv. 409-411 (June 1922); Paper Mill xlv, No. 21, 22, 80, (June-3-1922) Paper **Trade J.** lxxiv, No. 23, 31, 32, (June 8, 1922); **Paper,** xxx No. 22, 20-21, 26, (Aug.-2, 1922). A discussion of the proper care of saws and of barker and chipper knives.-A.P.-C.

C-0 P-6 Safety in the Wood Room. FRANK A. DRUMB. **Paper Ind.,** iv, 777,781 (Sept. 1922); **Paper Mill** xlv, No. 36, 4, 30, 32, (Sept. 16. 1922). The author recommends inculcating safety habits and methods of thinking so that it becomes second nature and not merely "grand-stand" efforts. The hot pond, circular saws, conveyors, hand barkers, splitters, chippers, cleanliness, and electrical hazards are each discussed in turn, describing the methods used at the Consolidated Water and Power Co. plant to minimize accidents. A. P. -C.

F. — Alkaline Processes of Pulp Manufacture and Equipment.

F-2 F-5 Extraction of Resin from Wood and Conversion of the Latter into Pulp. R. FABRE. Fr. Patent 538, 106, March 15, 1922 **Papier** xxv, 301-302 (July 1922). Highly resinous wood (including stumps) is chipped, extracted with a suitable solvent (preferably incombustible, such as trichloroethylene), and then pulped in the usual manner. The solvent is recovered by distillation. As the resin thus obtained has not been oxidized by the air it is superior to ordinary rosin. A. P. -C.

F-4 Continuous Causticization for Pulp Mills Provision for the Uninterrupted Recovery and Re-use of the Lime Sludge. W. D. MOUNT, **Paper Mill,** xlv, No. 36, 38, (Sept. 16, 1922); **Paper Trade J.** lxxv, No. 11, 44, (Sept. 14, 1922). A brief description of the continuous process of causticization, which requires the following special apparatus and plant; continuous causticizer, decanter, rotary filter, rotary kiln, continuous lime slaker, and auxiliaries such as pumps, etc. -A. P. -C.

F-4 G-5 Continuous Drum Filters in Pulp and Paper Mills. H. A. MORRISON. **Paper Ind.,** iv, 803, 805, (Sept. 1922.); **Paper Trade J.** lxxv,No. 11, 52-53 (Sept. 14th. 1922); **Paper Mill,** xlv, No. 36, 10, 12, (Sept. 16, 1922). Present applications of drum filters in pulp and paper mills are for caustic recovery, brown stock washing, thickening before bleaching, and deckers save-alls. Their merits for each of these purposes are briefly dwelt upon. -I. G.

F-4 G-5 Rotary Filters for the Washing of Paper Pulp and for Filtering and Washing of Caustic Lime Mud. G. D. DICKEY. **Paper Trade J.** lxxv, No. 11, 60-62. (Sept. 14, 1922). A description of the construction, use and operation of continuous filters for filtering lime mud and for dewatering stock, with a brief discussion of their merits. -I. G.

F-0 The De Vains Process for Preparation and Bleaching of Paper Pulp by Means of Chlorine DE PERDIGUIER. **Chimie et Industrie,** vii, 238-243. (Feb. 1922); Translation by A. Papineau-Couture in **Paper Ind.,** iv. 661-664, (Aug. 1922.) See Pulp and Paper xx 635, July 27, 1922. A. P. -C.

F-0 Continuous Soda Process. A. OLIER. Fr. patent 537, 038. Feb. 23, 1922. **Papier** xxv, 259-260. (June 1922). The material (grasses, etc.) is crushed, cut into short lengths, dusted, moistened with soda liquor, and fed to a digester consisting of a cylindrical shell surrounded by a steam jacket or a steam coil. The dimensions of the digester are such that the material takes 4 hours to travel through it and it is kept at the boiling temperature. It is then fed successively up through a washing tower, through a breaker, and through towers where it is treated with chlorine gas, with sodium hypochlorite, and with calcium hypochlorite and is discharged onto a wire where most of the bleach liquor is removed by means of suction. The layer of pulp is removed by a jet of water, which is then removed by delivering on to another wire. The stock is fed through the various towers by means of Archimedes' screws. -A. P. -C.

G. — Treatment of Pulp

G-5 K-4 G-Pulp Treatment and Drying — Operation and Equipment. Modern Washing System for Waste Paper Recovery Plants. ANTON J. HAUG **Paper Mill,** xlv, No. 31 4, (Aug. 12, 1922); **Paper Trade J.** lxxv, No. 8, 49-50, (Aug. 24, 1922) **Pulp and Paper,** xx, 785-786, (Sept. 14, 1922); **Paper Ind.,** iv, 799-800. (Sept. 1922). A description of a new three-cylinder washer put out by the Haug Machinery Co., with an enumeration of its merits, which are; simple to control, small power and water consumption, no special attention required, cleaner and brighter stock. -A. P. -C.

G-5 Use of the Continuous Centrifugal in the Soda Pulp Mill. J. R. KESSLER. and G. N. COLLINS. **Tech. Assoc. Papers V,** 67-68, (June 1922); **Paper Trade J.,** lxxiv, No. 22, 44-45, (June 1, 1922). Tests are described which were carried out with a 10-inch Elmore Centrifugal to remove black liquor from the pulp as it comes from the digesters. Promising results were obtained, which showed, however, that the machine as it stands is not entirely satisfactory, one of the objectionable features being knotting or balling of the fiber at the higher speeds. G. H. Elmore claims this would probably be eliminated with the larger machines.

G-11 K-13 Save-All V. ANTOINE. Fr. Patent 539-419, Apr. 1, 1922. Papier, xxv, 353 355. (Aug. 1922); **Papeterie,** xliv, 654-656, (July 25, 1922). A rotary filter drum is nearly submerged in the white water. The layer of stock which accumulates on the screen is discharged by means of a jet of compressed air, water, or steam into another chamber from which it is withdrawn in slush form. -A. P. -C.

(Continued on page 586)

UNITED STATES NOTES

The Equitable Trust Company, executor for the estate of James A. Outterson, former president of the Carthage Sulphite Pulp and Paper Company, applied last week in the Surrogate's Court, New York City, for permission to settle two claims aggregating $11,220 due to D. W. Belmet and the National City Bank of Troy on loans secured by 450 shares of the paper company. The trust company wishes to get the stock back into the estate, which so far has paid about 50 per cent. of the claims. A copy of Mr. Outterson's will, with the petition, showed he left $200,000 in trust for his wife, Eva S. Outterson, and divided the residue between her, a daughter, Eva G. Belmet, and a granddaughter, Ella M. Murphy, formerly of Carthage, received $200,000 in trust. The Carthage Free Library received $25,000.

Work on the Miami Valley flood prevention system, begun nearly ten years ago following the disastrous floods in the valley, has been completed. The enterprise, which has cost $32,000,000, consists of a number of mammoth dams, relocated highways and railroads, widened and deepened river channels, and other feats of engineering skill which natives of the community like to compare with the Panama Canal. The paper industry in the valley will benefit to a material extent by this vast impovement, not only because of the security afforded against the recurrance of serious floods, but by the greater traffic facilities available through the improved highways, river channels and rail accommodations.

Extensive damage was sustained by forest fires reported in various parts of the country the latter part of last week. The village of Pentwater, Mich., was threatened with destruction by a fire which was not put under control until practically every one in the place, even school children, joined the fire fighters. Fire in three places near Brantingham Lake, Lewis County, New York, destroyed more than 1,200 acres of valuable timber land and called for desperate efforts on the part of 500 men and youths to prevent a spread of the blaze to nearby towns and a resort colony on the lake. 400 fire fighters, under direction of District Forest Ranger Hopkins, aided by hundreds of volunteers, were put to severe tests in combatting eight separate blazes in the Adirondacks. Two of these in the Saranac Lake region were of menacing proportions. A stubborn fire, which started late Friday afternoon in the Azure Mountain timber land of the St. Regis Paper Company, about eighteen miles south of St. Regis falls, threatened serious damage. This property, chiefly valuable timber land, lies in a densely forested region, and the blaze there called for extra efforts on the part of the fire fighters to prevent irreparable loss. The conservation officers of New York State see more than a coincidence in the fact that the opening of the season of holiday travel in the Adirondacks has been immediately followed by an increased number of forest fires. The heedless tourist is seen again menacing the woods by his careless use of fire.

America's greatest forests are to be reproduced on the now barren hills of Pennsylvania, once thickly covered with pine, hemlock and a dozen other varieties of hard woods. Already the reclamation projects begun by the State, the Federal Government and large private corporations have brought under care approximately 6,000,000 acres of lands that in former years supported heavy stands of timber, and within the next few years it is more than probable that acreage will have been doubled through projects which are now partly started or in the making. Credit is being given for much of this practical effort at reforestation to Governor Gifford Pinchot, who is famed throughout the country for his work in forest conservation under the late Theodore Roosevelt. Of a total of 13,000,000 acres of land in the Pennsylvania desert surveyed by the forestry department, the State hopes to get 6,000,000 acres, including its present holdings.

The tiny dirigible balloon, equipped to war on the gypsy moth and other insect pests from the air, took off from Hammondsport, N.Y., last week for its first official flight. The dirigible was built at the request of the Department of Agriculture for use in the aid method of attack on insect tree pests. It has a gas bag capacity of 50,000 cubic feet and is capable of maintaining itself in the air for fourteen hours with three passengers. It is equipped with two motors, placed on outriggers.

The paper bag manufacturers in New York City are preparing to fight attempts to unionize their shops. There are ten or twelve large factories in this district and efforts at organizing the help have heretofore failed.

L. Oscar Lay and F. M. Lugo have formed a company to engage in the paper export business. The concern will be known as the Lay-Lugo Paper Company with offices at 29 Broadway, N. Y. Mr. Lugo was connected until recently with the export department of the American Writing Paper Company. His partner, Mr. Lay was travelling representative of the James P. Hefferman Paper Company in Latin America for more than seven years.

Articles of incorporation have been filed in Wilmington, Del. by the Old Colony Pulp and Paper Corporation. The concern is capitalized at $600,000 and states as its object the acquiring of timber lands.

Eight additional warehouses and service stations in the principal cities of the Middle West, South and Pacific Coast, have been established recently by the Eaton, Crane and Pike Company, making the total number of such branches twelve in all. Because of the increasing business and because of the establishment of these warehouses the company will authorize the issue of $1,500,000 cumulative preferred stock.

Collins S. Fuller, formerly with the wall board department of the Eddy Paper Company, has accepted the position of sales manager of the Plainfield Paper Company, Childsdale, Mich.

God blesses the home where the family altar is maintained; and if the altar has been neglected, it is not too late to get into the path of blessiing.

British Trade News

(From Our London Correspondent)

London, May 22, 1923

The editorial article which appeared in the "Pulp and Paper Magazine", on April 26, (page 424), on "Anti-Canadian Propaganda" should be reprinted and circulated amongst all the paper producers of the Dominion. The writer is explanatory and he sums up the whole position, with a good insight, knowledge, and fine lucidity. Canadian exporters have been hit "below the belt" in regard to the Australian market and I hope they are not going to take the slanderous and unfair statements made about them lying down. Be it remembered, when the Australians gave the British mills the special reduced tariff, the British travellers returned home crowing over the "scoop" they made, while Canada—an integral part of the Empire, whose sons have died and bled for it—was retained in the classified list as a foreigner by the Australians. And the strange thing about the whole business is that there are more foreigners directly and indirectly connected with the British paper trade than the Australians can realize. The Australians have been "hoodwinked" and cajoled into a tariff, to the detriment of another part of the Empire, which is a disgrace to white business men. This is a subject on which we cannot mince words. If a plebicite was taken tomorrow in England on the treatment Canada has received, I vouch that the majority would be dead against the policy of the Australians. Canada's only hope now is the Imperial Trade Conference, to be held next October, and I appeal to Canadian paper men to muster their forces for it and arguments, and meet the Australians in London with a view of settling and adjusting the differences.

Canada's Friend Retires

Mr. Bonar Law, who was born in New Brunswick, has retired from the Premiership of England, and Canada loses a good friend. It was he who suggested the holding of the Imperial Trade Conference in October and I am sure if the treatment that Canada had received from Australia had come before him, as President, he would have put a different complexion on it for the benefit of Canadians. His policy was "Trade within the Empire" and as a business man he knew the meaning of those words. I may be right and I may be wrong, but I feel that the Imperial Trade Conference will lose some of its importance now that Bonar Law is gone. Therefore, Canadians must be wary; they must keep themselves acquainted with what is developing and there are trade commissioners in London paid for finding out the information for the benefit of all paper men. If these men cannot do it satisfactorily there are other sources. But leave nothing to chance.

New Machinery

Messrs. Lloyd have recently put in hand a large addition to their mill. There will be two wide and fast running paper machines with the most modern preparatory plant, embodying all the latest improvements, and the company hope to put it into operation early in 1924. The most careful study, it is stated, has been given to every detail in this new development and it is expected that the improvements will represent the highest possible efficiency and economy in the production of newsprint.

Mr. John Wolstenholme (managing Director of Chas. Walmsley & Co. Ltd), passed through London last week, after a trip in Norway and Sweden and he announced that his firm is commissioned by the A/S. Follum Traesliberi, of Hönefos, Norway to instal a "Walmsley" paper machine, with the Lloyd-Hutchinson drive and driven by a "Walmsley" enclosed high speed engine. The machine will make paper 215 inches wide and will run at 800 ft per minute, the daily production being 90 tons.

Walmsley's are also supplying the machinery for the new pulp and paper mills in Newfoundland, which will employ between 2,000 and 3,000 hands in lumbering and in the mills. The output will reach 400 tons of newsprint a day. Power will be obtained from Deer Lake and a dam will be built to retain the Grand Lake waters.

Capturing Australia

Mr. W. L. Farrow, who presided at the annual meeting of Wiggins, Teape & Co. (1919) Ltd., in London referred to the fact that their chairman (Mr. P. Holden), had gone to Australia, at the request of the Directors, to carry out an important business commission. The company's machinery, he added, was not yet fully occupied, and they were not yet able to show more than average results. Their object was to keep prices as low as possible, but the cost of raw material had been increasing and it had only been possible to maintain the present price level owing to the expanding demand for their papers. The photographic paper branch of the company was making steady, if, rather slow, progress, the confidence in foreign papers being hard to kill. A dividend of 5 p.c., less tax, was declared on the ordinary shares.

Pulp Supplies

The imports of wood pulp from the 1st January to the 30th April, were 242,996 tons, compared with 140,506 tons for the same period in 1922. There is a notable drop in the shipments from Canada in wet groundwood. Countries supplying were:

	1922 Tons	1923 Tons	£-1923
Sweden	14,810	11,644	51,263
Norway	59,845	123,966	97,381
Canada	7,700	2,778	13,794
Other sources	505	1,547	8,345

Of bleached sulphite 7,939 tons have been imported for the four months, compared with 5,453 tons; unbleached Chemical (dry) 90,394 tons, compared with 47,364 tons; chemical wet, 1,662 tons as against 2,967 tons; and dry groundwood 3,066 tons, an increase of 204 tons over the same period in 1922.

The pulp market continues firm and buyers are just purchasing their requirements. Sellers, however, hold out no hopes of reduced prices.

A man's conversation usually reveals the principles in which he is mostly interested.

It takes a brave man to honestly face himself.

H. — Bleaching, Bleach Manufacturing and Equipment

H-5 Advantages of Bleaching Pulp at a High Density. R. B. WOLF. **Paper Mill,** xlv, No. 20, 4, 6, 7, (May 27, 1922); **Paper Trade J.** lxxiv, No. 22, 24, 26, 28, 30, (June 1, 1922). Under given conditions, with time of bleaching kept constant, the consumption of bleach and percentage of shrinkage vary directly with the temperature and inversely with the concentration of the solution. An apparatus is described in which the stock can be bleached at a concentration of 18 per cent, being delivered to the bleacher at 25 per cent and diluted to 18 per cent by the bleach liquor. The principle on which it is based is thoroughly mixing the stock and liquor at frequent intervals, which is accomplished by the longitudinal worms which act as conveyors moving the stock in a solid mass and cross worms which force the stock and bleach liquor through openings 24 inches in diameter, assuring very thorough mixing. At the plant of the Newton Falls Paper Co. the saving effected by this system is estimated at $3.99 per ton, and old hemlock which was too poor even for wrapper stock was used without culling and the resultant pulp produced a high grade exceptionally clean bond paper. -A. P. -C.

K. — Paper Manufacturing and Equipment

K-4 Process for Making Paper Pulp. G. A. MOURLAQUE. Fr. patent 540. 471, April 19, 1922. **Papier,** xxv, 356, (Aug. 1922). The wood or other vegetable material in a fine state of mechanical subdivision is subjected cold to the action of an oxidizing solution or gas for several hours; e.g., ozonized air under a pressure of 2 to 3 atmospheres, or a solution of barium or sodium peroxide treated with sulphuric acid in the presence of the fibrous material. This causes the incrustants to swell and soften up. The pulp is then broken and beaten hard, and can be used directly for the manufacture of news print or of wall paper. For the finer grades of paper, the pulp from the oxidation tank can be cooked in the usual mannar. -A. P. -C.

K-4 Mechanical Process for the Production of Cellulose from Grasses. J. J. GAHLER. Fr. patent 540, 665, April 21, 1922. Papier, xxv, 356-358, (Aug. 1922). It is claimed that certain classes of grasses (cyperaceae, gramineae, typhaceae) can be beaten (after cutting and crushing) with tackle which draws out and separates the fibres instead of cutting them so as to remove the incrusting matter, leaving pure cellulose fibers. -A. P. -C.

K-7 P-6 Safety in the Beater Room. FRANK A. DRUMB. Paper Ind., iv, 652-655, (Aug. 1922). A discussion of the hazards of the beater room and the methods of guarding against them, covering the first aid cabinet, guarding drives, defective floors, the stock chest, piling and trucking stock, and lighting and ventilation. -A. P. -C.

K-7 The Beater in Great Britain from the Engineering Point of View T. D. NUTTALL. **Paper Trade J.,** lxxiv, No. 6, 48-49, (Feb. 9, 1922). A description of the development of the beating engine, with a brief discussion of the advantages of a good circulating beater, of the effects of cutting and rubbing action, and of power consumption of beaters. -A. P. -C.

K-7 Trimbey and Tibbitts Proportioning and Metering System for Paper Stock. E. J. TRIMBEY. Can. Patent 223, 973, (Sept. 26, 1922). **Paper Ind.,** iv, 805, 807, (Sept. 1922); **Paper Trade J.,** lxxv, No. 13, 60, 64, (Sept. 28, 1922). The meter consists of a cylindrical shell with a flanged inlet at the back for connection to the pipe line, and open for about 40 per cent of the circumference on the front side for dumping. Within the cylinder is a four-arm paddle wheel or rotor with heads at each end cast integral with the hub and arms, and with shaft carried in suitable bearings and fitted with a gear for driving. A recording counter records the number of revolutions in a given time; i. e., the number of times the compartments of the meter have been filled and emptied. By using two or more meters of different sizes, in conjunction with consistency regulators, the amounts of different kinds of slush pulps, clay, size, color, etc., can be accurately proportioned and measured. -A. P -C.

K-8 K-12 The Coloring of Paper on the Paper Machine. EMIL HEUSER. **Papierfabr.,** xx, 325-331, (March 19, 1922). Translation by I. Ginsberg in Paper Trade J.,lxxv, No. 4, 49-52, (July 27, 1922), and in **Pulp and Paper,** xx, 757, 761, (Sept. 7, 1922). Description of the latest developments in coloring paper on the paper machine taken from the patent literature, more particularly representing German practice. It covers coloring by the addition of solutions of coloring matter, by means of rolls, by means of differently colored pulps, and by the action of heat. -A. P. -C.

K-8 K-12 Improvements in the Manufacture of Colored Paper and Cardboard. M. and C. CARTIAUX. Fr. patents 537, 218, Feb. 27, 1922; 537, 356, and 537 357, March 2, 1922. **Papier** xxv, 260-262, (June 1922).

537-218 — One or more colors are applied in lines, bands, etc., either separate or overlapping one another, by means of suitable color distributing devices and doctors placed at the wet end of the machine: preferably over the presses.

537, 356 — The color is applied by means of one or more perforated pipes at or near the slice which are given a reciprocating motion conforming to the shake of the wire.

537, 357 — The coloring device consists of two doctors between which is a color distributing member. As many of these as there are colors to be applied are used at the dry end of the machine. -A. P. -C.

K-8 Coloring Paper With Fast Pigments. E. ARNOULD. **Papier,** xxv, 347-350, (Aug. 1922). The author lists the fast blue, red, yellow, brown, and black coloring matters and gives practical indications as to their use to obtain satisfactory results. -A. P. -C.

K-10 K-13 The Sizing of Boards. Pappen and Holzstoff Ztg., No. 30, 1921; Translation by P. Bartholow in **Pulp and Paper,** xx, 787-788, (Sept. 14, 1922); **Paper Mill,** xlv, No. 38, 43-44, (Sept. 30, 1922). A brief discussion of the reason of the greater difficulty experienced in sizing boards than paper. -A. P. -C.

K-12 Cotton Felts and Woolen Felts. J. M. DE PORTEMONT. **Papier,** xxv, 375-377, (Aug. 1922). Experiments carried out with cotton and woolen felts are described which show that; (1) Cotton felt absorbs moisture more rapidly at first, but after it has absorbed a certain amount of water its absorbency is the same as that of wool; (2) water evaporates more readily from cotton felt; (3) the absolute moisture

absorbing capacity of wool is greater than that of cotton. In paper mill practice(3) is without importance as the dryer felt never becomes saturated. A comparison of the life of cotton and woolen felts can be carried out only under actual working conditions in the mill. -A. P. C.

K-12 M-7 Have You Too Much Ventilation? J. O. ROSS. **Paper Trade J.,** lxxiv, No. 2, 47-49, (Jan. 12, 1922). A system supplying more air than is needed may be as poor as one with insufficient capacity if improperly designed and is very wasteful. Each system must be studied on its own merits and should not be copied from other successful installations as conditions may be entirely different in the two cases. -A. P. -C.

K-12 Removing Condensate from Paper Machine Dryers. PAPETERIES NAVARRE. Fr. patent 538, 812, March 24, 1922. **Papier,** xxv, 303-304, (July 1922); **Papeterie,** xliv, 653-654,(July 25, 1922). A suitably lagged pipe from each dryer is led to the bottom of a tank with an overflow, of such a depth that the height of water from the overflow to the bottom just balances the steam pressure in the dryers. If the tank cannot be made deep enough, the overflow may be raised over the top of the tank, or the pipes can be provided with a throttle or reducing valve to cut down the pressure at the well. The tank or well is well lagged to prevent loss of heat and the water is used for boiler feed. -A. P. -C.

K-14 Machine for Cutting Cigarette Paper. UNIVERSELLE CIGARETTENMASCHINEN - FABRIK j. c. MULLER & CO. Fr. Patent 539, 818. April 7, 1922. Papier, xxv, 355-356, (Aug. 1922.) -A. P. -C.

K-15 The Grinnell Dryer Applied to Wall Paper and to Coated Paper. JEROME D. STEIN. **Paper Ind.,** iv, 813, 815, (Sept. 1922); **Paper Trade J.,** lxxv, No. 11, 64-65, (Sept. 14, 1922); **Paper Mill,** xlv, No. 36, 18, (Sept. 16, 1922). A brief description of the Grinnell wall paper and coated paper dryer, the fundamental principle of which is drying by the slow movement of a very large volume of only moderately heated air, together with a discussion of its merits. The main advantages are immense saving in floor space, and drying time, fuel and power, and improvement in working conditions. -I. G.

K-19 Development of Coating Machines. W. H. WALDRON. **Paper Trade J.,** lxxiv, No. 23, 47, (June 8, 1922); **Paper Mill,** xlv, No. 21, 48, 50, (June 3, 1922); **Paper,** xxx, No. 22, 16-17, (Aug. 2, 1922). Brief Historical sketch. -A. P. -C.

K-21 The Roofing Machine C. S. BIRD, Jr. **Paper Mill,** xlv, No. 21, 24, 66, 68, (June 3, 1922). A description of variations in present day practice in the manufacture of saturated roofing papers, with a plea for co-operation between the roofing and machine manufacturers for standardizing practice and design in roofing machines. -A. P. -C.

K-21 Building Material. H. W. WHITE. Can. Patent 223, 353, Sept. 5, 1922. The material consists of a thick layer of dry waste fibrous material (straw, dried grasses, dry leaves, etc.) treated with sufficient asphalt to saturate the individual fibres without filling the pores of the mass, faced on the inside with a layer of asphalt (or other suitable adhesive) and a sheet of felt or paper, and on the outside with a layer of asphalt, a sheet of impregnated paper, and another layer of asphalt coated with grit, sand, etc. -A. P. -C.

K-21 Shingles and Material for Making Same. A. S. SPEER and L. F. LINDLEY, assignors to ROOFING PATENTS CO. Can. patent 223,401, Sept. 5, 1922. Only such portions of the felt base are coated with asphalt, sand, etc., as will be exposed to the weather. -A. P. -C.

M. — General Equipment

M-9 Steel Belts and Their Application to the Solution of the Conveying Problem. H. CARLSON. **Paper Trade J.,** lxxv. No. 11, 58-59, (Sept. 14, 1922); **Paper Mill,** xlv. No. 37, 26, 30, (Sept. 23, 1922). A discussion of the merits of steel belts as conveyors. (Compare CARLSON, **Pulp and Paper,** xx 773, Sept. 7, 1922.) -I. G.

M-12 Application of Recording Instruments in the Paper and Pulp Industry. L. G. BEAN. **Paper Trade J.,** lxxv, No. 11, 54-55, (Sept. 14, 1922); No. 15, 57-59, (Oct. 12, 1922). A brief discussion of the advantages of recording instruments over ordinary indicating instruments, with an enumeration of some of the uses to which they are put in pulp and in paper mills. -I. G.

N. — Power Generating and Equipment

No. 4 Evaporation test of a 1,500 H. P. Electric Plant. W. C. EDGE. **Paper Ind.** iv, 811, 813, (Sept. 1922); **Paper Trade J.,** lxxv, No. 11, 62-63, (Sept. 14, 1922); **Paper Mill,** xlv, No. 36, 14, 16, (Sept. 16, 1922). A brief description of the PBH quick-closing chain-operated water gauge,PBH quick-opening self-closing gauge cock, and PBH gauge glass protector, and of the Hays differential draft gauge, Hays gas analysis instrument and Hays CO_2 and draft recorder, together with an outline of their merits. -I. G.

N-4 Electric Steam Boilers. G. A. MAILLET. Papeterie, xliii. 485, (June 10, 1921.) Translation by A. Papineau-Couture in **Paper Trade J.,** lxxiv, No. 3, 48-50 (Jan. 19, 1922). See **Pulp and Paper,** XIX, 1175, 1197, Nov. 17 and 24, 1921. -A. P. -C.

No.4 Evaporation test of a 1500 H. P. Electric Boiler. M. C. ALLIN. **Paper Ind.,** iv, 781-782, (Sept. 1922.) Figures are given of the results of an evaporation test which showed a boiler efficiency of 94 per cent. With coal at $8 a ton and a fair boiler efficiency, if electric power were $9.35 per H. P. year steam could be produced as cheaply electrically as by coal. -A. P. -C.

CASH FOR BACK NUMBERS

Readers who can spare copies of the following numbers of the Pulp and Paper Magazine will confer a great favor by communicating with the Circulation Manager. The issues for which request are being constantly received are: — Feb. 22, March 1, 8, 22, April 12, 26, May 10, 24.

Blessed the man who, when he faces backward, as all must do sooner or later, finds no spectre in those departed years to fright him in his dreams

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Never remember a favor you have shown; never forget one you have received.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, June 5—Local jobbers report that business is only moderate. Apparently the falling off which is usual during the summer has set in, and we may now expect that trade will be on a reduced scale for some little time. Nevertheless, general conditions are fairly good, and there is no real reason for complaint.

The pulp and paper industry, as a whole, is on a firm basis, the only danger being that of over-expansion. It is evident that there are some who believe that the industry affords further opportunities for profitable investment, and hence the report of new schemes both in pulp and paper. It remains to be seen whether the optimism of those responsible for additional ventures will be justified, but on the face of it, a policy of caution would appear to be the right one.

There is very little change in the newsprint situation. The mills report that they are very busy and that any surplus stocks are readily absorbed. Indications are that the demand will be strong for several months, due to the increasing circulation of and heavy advertising in United States papers.

In other departments business is steady. Lightweight papers are rather slow, with bonds and ledgers in moderate request. The board mills state that there is a very satisfactory call for their commodities. The paper stock market is good, orders coming in quite freely. Owing to the activity in building, roofing felts are quite firm, one or two of the mills being over-sold.

The imports of paper in Canada during April show a fairly large increase, being valued at $727,419, compared with $591,872 in the corresponding month of 1922. Our purchase of boards in April this year showed a very substantial decrease, especially in Bristol boards and blanks, but printing paper on the other hand and notably book and printing, was imported much more freely. Kraft and other wrapping paper also showed a good increase, whilst bonds and ledgers fell away, being about one-third less than in the corresponding month of 1922. We bought heavily of hangings, or wall paper, the value going up from $32,000 to $53,000. Bags decreased by about $9,000, while boxes, or containers, were up $41,000. There was a slight decrease in toilet and towels in sheets.

In the pulp market, the demand for groundwood continues good, with prices steady. As far as can be seen, there will be a good call for this for some time. Sulphite is moving slowly, with kraft selling in fair quantities. Bleached sulphite maintains its price and is being bought quite freely.

The imports of pulp during April were as follows: Soda pulp, $11,228 against $5,540 in April, 1922; unbleached sulphite $60,472 against $63,531; wood pulp, mechanical, 2,394 against $3,452.

There has been a falling off in the orders for pulpwood, although the price shows no change. The dealers expect a considerably better market in the near future.

Reports by some of the pulp and paper companies are to the effect that the drives are proceeding in a satisfactory manner, and that the delay which occurred owing to the late season has been more than made up.

Ontario Market News

A canvass of the pulp and paper situation in Ontario reveals gradually improving conditions following a period in which both the jobbers and manufacturers were inclined to complain somewhat. The bulk of May yielded only a fair amount of business, but as the month closed there were indications that there would be a much better turn-over of paper products from now until the usual quiet period sets in later in the summer. It was hoped by some that the quiet season had been advanced this year and that it has already been experienced, which, if true, would mean that the summer would swing along with a steady volume of business without the usual hot weather lull. Whether or not this is the situation the months of July and August will tell. Just now, however, a decided improvement in sales by the jobbers is taking place. For instance distributors of wrapping paper and paper bags, which have been very dull for some weeks, report that business is picking up considerably. Book, writing and bond papers are beginning to show greater activity and the same may be said of light weight papers, such as tissues, toilets, etc. The board mills are reporting increased sales to the paper box industry which is again getting busy after several weeks of light operations. It would appear as if the era of big orders, however, either by the consumer or jobber, is not yet at hand for what business exists is mostly in small lots, but these are gradually increasing in bulk, although none of the firms are stocking heavily. There has been no diminution in manufacturing operations in the Ontario paper mills and despite the fact that the jobbing and printing trades have been dull the mills have had no difficulty in disposing of their product in practically every line of paper.

PULP. — There is no change in the pulp situation. Manufacturers of sulphite are not disposing of their output readily and there would appear to be more or less of a buyers' strike on. Paper mills were paying a lower price last year and they are not inclined to buy until they are satisfied that the rock bottom has been reached. Manufacturers look for better business in June and July but in the meantime sales are light. Bleached sulphite can be had at from $85.00 to $90.00 and unbleached from $60.00 to $65.00, with newsgrade around $56.00. Groundwood pulp is very active at from $35.00 to $38.00 and paper mills are experiencing difficulty in getting it. Although water has commenced to flow there is not the quantity available this season that there was at the same time last year and the indications are for a scarcity this summer. The result is that mills that ordinarily had supplies of groundwood are not selling now. It is stated that the water in Northern Ontario was never so low as it is at the present time and that several of the big mills have been short for grinding. One of the big mills, which ordinarily had 10,000 h.p., has not more than half that amount available now and from many sources come reports of water shortage which means a groundwood shortage.

RAG AND PAPER STOCKS. — Price decreases were recorded last week in two lines of paper stocks. No. 1 mixed papers dropped from $1.20 to $1.00 and No. 2

Miscellaneous from $1.15 to 90c. per one hundred pounds. All other lines remain stationary. The demand continues heavy. Low water in some of the mill districts is causing some of the mills which normally use groundwood to look around for waste paper, although the demand thus created has had no effect upon the market as yet. In some cases it is stated that water has been so low that mills could not get on with their grinding and one of the mills is known to have sent in an enquiry to a Toronto waste paper firm for twenty-five carloads of waste paper. If more business of this character develops the waste paper market is bound to be affected although there has been no material change as yet. Considerable waste is coming from the paper box plants and if the board market keeps up increases in waste paper prices may be looked for. The rag market has been somewhat stagnant of late, although white cotton rags are in fair demand and the roofing mills are getting busier all the time.

NEW YORK MARKETS

New York, June 2 — (Special correspondence) — Activity in the manufacturing branch of the paper industry keeps up on a fairly broad scale. Reports tell of most mills holding to their recent rate of production, and indications point to the papermaking plants of the country — viewed as a whole — operating on a bigger scale than is customary at just this time of the year. Some have begun to slow down a bit since inventory taking has commenced and for repairs to equipment, but aggregate production is being maintained at a better volume than ordinarily at this season.

Retail demand for paper has simmered down in numerous quarters. Consumers themselves are starting to take mid-year inventory and therefore are bent on keeping stocks of material at low levels, while the usual summer quieting of business has affected demand for paper to some extent. The movement of supplies from mills toward consumers has shown but little decrease, however. Most paper manufacturers are well provided with orders from customers, and are shipping out their product about as rapidly as it becomes available, with the result that equally as much paper is being moved from mills at present as at anytime during the past few months, and, moreover, indications are that the prevailing steady shipments from producing plants to consuming centres will keep up until at least when manufacturers have caught up better with their orders.

The latest Federal Trade Commission report shows that newsprint production in April was slightly less than that of the preceding month. Domestic mills produced 116,719 net tons of total newsprint in April, compared with 129,294 net tons in March, 114,611 tons in February, 127,452 tons in January, 111,861 tons in April last year, and an average monthly output for the past five years of 111,450 net tons. Of the 116,719 net tons of total newsprint produced in April last, 107,023 net tons were standard news, comparing with an output of 117,075 net tons of standard news in March, 105,079 net tons in April a year ago, and an average monthly output over the past five years of 101,400 net tons. April, 1923, production of total newsprint, while being somewhat under that of the several preceding months, was five per cent above an average of the past five years, while the April output of standard news was six per cent better than an average monthly production.

HANS LAGERLOEF, President and Treasurer
ORVAR HYLIN, Vice President
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TRADE MARK

Lagerloef Trading Co., Inc.

52 Vanderbilt Avenue
NEW YORK, N. Y.

Telephones
Murray Hill 4246 4247

WOOD PULP

SOLE AGENTS IN U. S. A., CANADA, MEXICO AND CUBA FOR

Finnish Cellulose Association
Helsingfors, Finland

AND

Finnish Wood Pulp Union
Helsingfors, Finland

An encouraging feature of the Commission's report is that mill stocks of print paper declined in April. At the beginning of that month domestic producing mills held 20,180 net tons of total newsprint, while at the end of April stocks had been reduced to 18,876 net tons, which means that manufacturers shipped out every ton of their production during the month as well as a couple of thousand tons of their surplus paper. Similarly, mill stocks of standard news decreased from 15,479 net tons at the outset of April to 14,543 net tons at the close of that month.

The announcement that the International Paper Company would not revise prices on newsprint over the second half of the year has put a check on all of the trade gossip relating to an advance in print paper quotations. It is expected that other manufacturers will soon reassure publishers that they will not change prices either, and the effect of this move on the part of paper producers is likely to be a further stabilization of the market. Many in the trade contend that they do not see what is going to prevent prices on spot lots of newsprint from advancing if demand continues at the same rate of the past few months. It is stated that much difficulty is being experienced by consumers in getting spot shipments of newspaper, and that the law of supply and demand itself will make for higher prices unless demand recedes or mills increase their output.

Book papers continue in a firm position and are moving in steady tonnage. Prices display an advancing tendency though no actual changes have been noted this week. Machine finished book is selling freely at around 7 cents a pound f.o.b. New York, and it is stated that only in exceptional cases are supplies to be had at less than this figure.

Coarse papers are seasonably quiet and yet there is a fair call from consuming quarters for both wrapping and tissues. However, were it not for the movement against back orders and contracts this branch of the industry would be comparatively inactive. Quotations are steady and there is no sign of easiness in any quarter.

Fine papers are firm in price and are wanted in good amounts. Jobbers are placing orders with much regularity and seem to be disposing of shipments as quickly as received. Activity in the printing trades is of fair dimensions, which means of course that consumption of bonds and ledgers is running rather heavy.

Nothing new is recorded in box boards. Prices are characterized by a firmer tone than in some time, and it would seem as if the efforts of manufacturers to stabilize board quotations are being rewarded. Plain chip is quoted at $62.50 a ton f.o.b. New York, and news board is priced at $65 in most cases though some mills are said to be accepting orders for news at the same price as for chip.

GROUND WOOD. — Current demand for ground wood is slow. Consumers appear to be fairly well supplied for the present and to be reluctant to anticipate their wants, and there is only a routine demand of small scope noted. The continued lack of important buying is affecting prices. No actual changes of consequence have been recorded this week, but there is a soft tone to quotations and indications are that buyers are succeeding in getting pulp at concessions. The main reason for the present market situation is that supplies are on the increase as a result of more favorable water conditions in grinding districts. Most consumers who operate their own grinding plants not only have their own needs provided for but also are directing some of their output into the open market, thus reducing the demand as well as affording a bigger available supply for other buyers. Reflecting this condition, the Federal Trade Commission's report on the pulp industry shows that mill stocks of ground wood increased no less than 30,000 tons during April from a total of 59,327 net tons at the beginning of that month to 89,180 net tons at the end of April. Quotations on ground wood range around $36 or $37 a ton at pulp mills for prime spruce pulp for prompt shipment, and it is stated that in some quarters purchases could probably be effected at slightly under these levels.

CHEMICAL PULP. — There is still a lack of important demand for chemical wood pulp. Dealers and importers describe papermakers as being on a "buyers' strike" and say that activity in the market is very spotty and involves at best small amounts of pulp. There is no weakening of quotations, however. Sellers seem determined to secure the full prices asked, and are mostly in an independent enough position because of light stocks to enable them to hold out for the rates quoted. With open water shipments now moving forward from Scandinavia, it is probable that some change in the market will develop shortly. Either values will soften owing to increased supplies, or else paper manufacturers will come into the market to cover their requirements and make for a stronger price situation. Importers claim to have very little stock unsold on this side of the Atlantic, and contend moreover that it is no easy matter to locate pulp available in sizeable quantities in Sweden because because a majority of Swedish producers are well sold ahead, largely as a result of the recent strike.

Prime unbleached sulphite of foreign origin is selling at 3.40 to 3.50 cents per pound ex-dock New York, and such sales of Swedish kraft pulp as are reported are invariably at a price basis of 3.35 cents on the dock. Domestic pulp quotations hold unchanged.

RAGS.—Some grades of papermaking rags are more or less neglected by buyers while others are enjoying a fairly good demand for this time of the year. New cuttings are moving only in a spotty manner and generally in small lots; similarly, roofing rags are being absorbed by consumers in limited amounts at the moment, yet old whites and thirds and blues are firm and meeting with a ready sale in numerous directions. New white shirt cuttings of No. 1 grade have been offered to writing paper mills this week at 12.75 cents f.o.b. New York, and No. 2 white shirt cuttings have actually sold at 6 cents New York. Washables, silesias, muslins and other grades of new rags are in small demand, with prices inclining lower. Roofing stock has sold down to 1.15 cents a pound f.o.b. New York for No. 2 packing and 1.25 cents for the No. 1 grade, and even at these market levels felt paper mills have been hesitant about buying. On the other had, there have been reports of sales of repacked thirds and blues of choice quality to paper mills at 3.25 cents a pound and higher, while rough blues are held by most dealers for 2.50 cents at shipping points.

PAPER STOCK. — There is but routine activity in old paper and prices exhibit a declining trend. Folded newspapers have moved down in value to about a cent per pound f.o.b. New York, and No. 1 mixed paper has sold at 80 cents a hundred pounds New York and probably at less. Flat stock is distinctly weak, and local dealers are offering heavy No. 1 magazines at 1.75 to 1.80 cents a pound f.o.b. this city. Shavings are in moderate demand though quotations

are slightly lower at about 3.25 cents a pound for No. 1 soft white, and 4.10 cents for No. 1 hard white shavings. Old kraft paper continues to bring 2 cents or a trifle higher f.o.b. dealers' points.

OLD ROPE AND BAGGING. — Demand for old manila rope is no better than an average and prices are easier than has been noted in some time. Domestic manila rope is bringing no better than 6.50 cents a pound at dealers' shipping points and the probabilities are some paper mills have bought at cheaper prices. Foreign rope is quoted at around 6.25 cents ex-dock. Old bagging is quiet and nominally unchanged in price. Gunny is moving freely but in other directions than to paper mills.

TRADE COMMISSIONER TALKS AT THREE RIVERS

Mr. W. C. Egan, Trade Commissioner for Canada to South Africa, delivered a very interesting address Tuesday night to the Three Rivers Board of Trade, on the problem of exporting to the latter country. Mr. Egan made it quite clear, that while South Africa held out great possibilities to manufacturers in general, yet because of the peculiarity of the natives in carrying all their purchases, prospects for any great increase in the export of wrapping was very limited; at least in so far as the West Coast and Nigeria were concerned. The natives carry everything from a thimble to a fresh smoked ham without being wrapped.

The white settlements of Cape Town and Johannesburg present the greatest possibilities, but even here in the former city at least, the white population is outnumbered six to one.

Special emphasis was laid on the subject of packing. Wayagamack in this respect was highly commended by Mr. Egan. He stated that Wayagamack was praised, by all importers of paper, for the fine condition the bales and rolls were always in on arrival.

He touched on one other point of interest to exporters in dealing with the subject of documents. The Trade Commissioner declared that Canada was very slow in getting out the notification to the customer that the goods were on the way and giving the price, etc. Mr. Egan showed how the arrival of an invoice with the details of the shipment, ahead of, instead of after, the goods often enabled the agent or customer to sell the complete shipment before its arrival, resulting for the manufacturer in a repeat order being secured.

WAYAGAMACK INSURE THEIR EMPLOYEES

This progressive firm, well known for its Employees Service Welfare Work, has taken one more step in this direction. In conjunction with the Metropolitan Life Insurance Company, N.Y., it has undertaken to insure the life of each employee. Each workman, depending on his length of service, is allowed to take out an amount up to $1,400 if single and $2,500 if married. The cost to employee is almost negligible, being just sufficient to keep it from being a complete gratuity from the Company. No medical examination is required, and the insurance becomes effective as soon as 75 p.c. of the employees subscribe and make application for same.

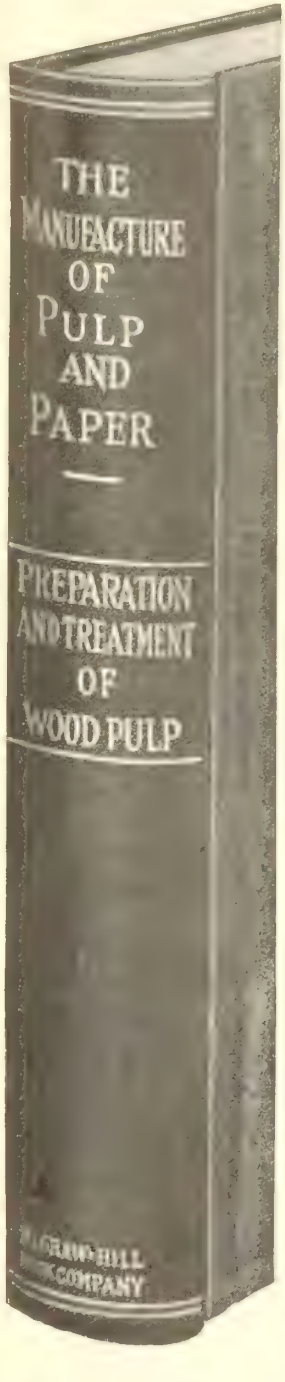
The Company's arrangement with the Metropolitan Life Insurance Company also includes a nursing service which will be available to the employees free of charge.

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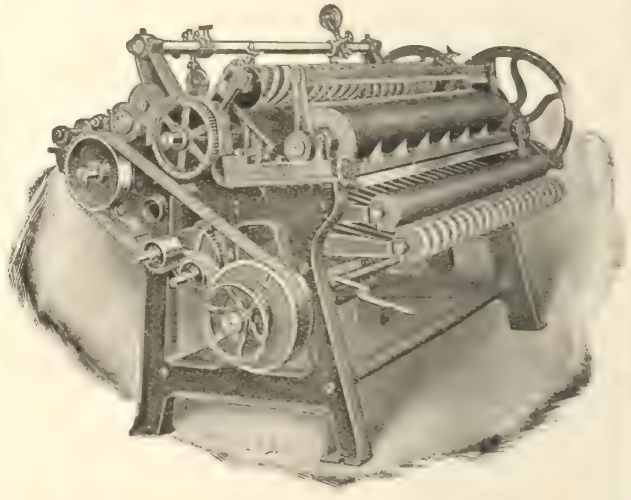
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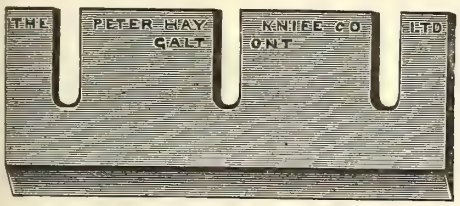
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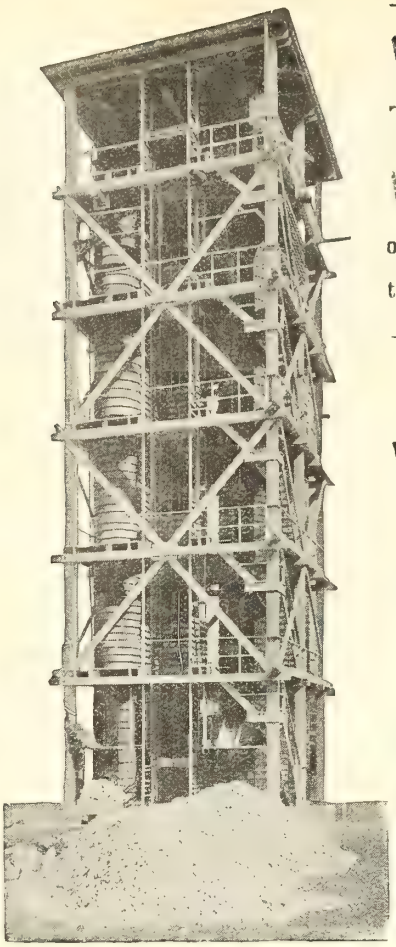
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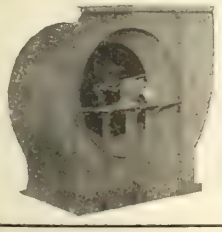
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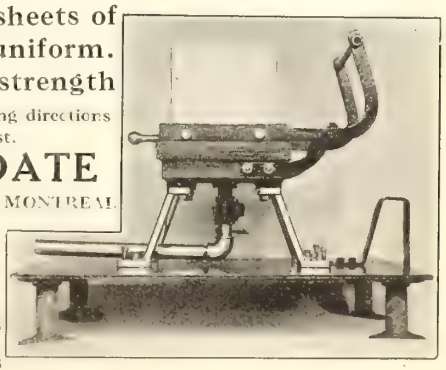
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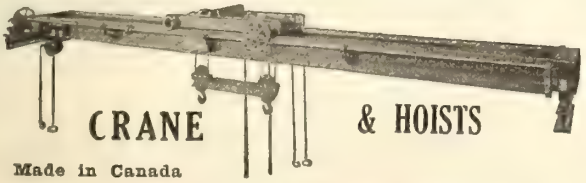
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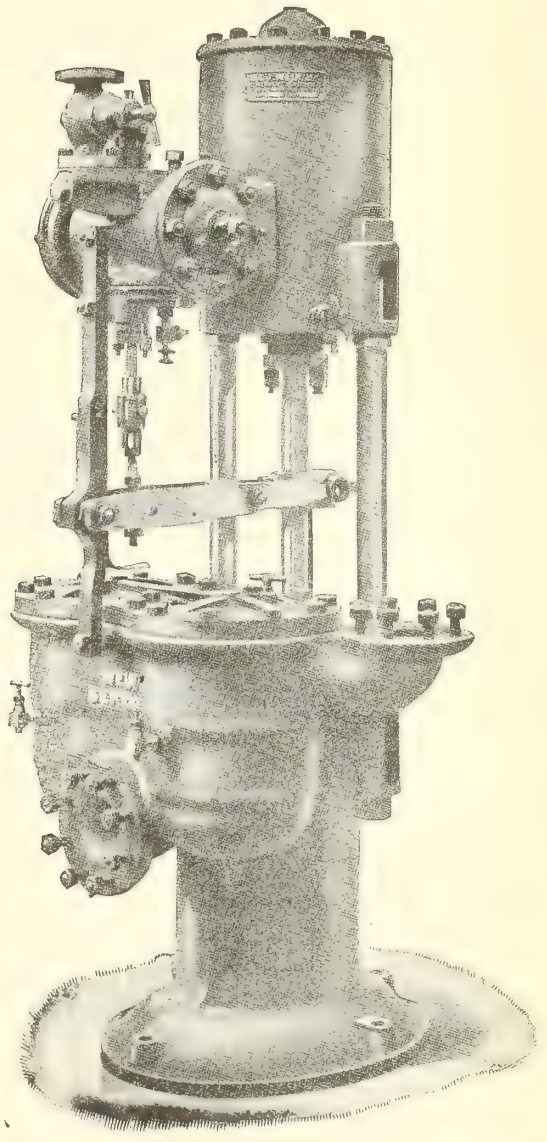
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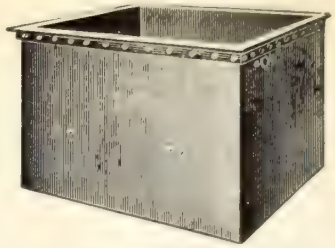
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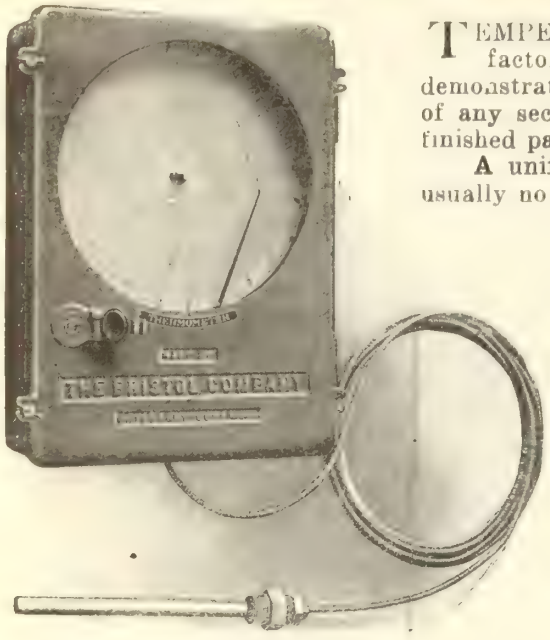
Tissue and Toilet:
Beveridge Supply Co., Ltd.
Can. Vegetable Parchment Co., Ltd.
Eddy E. B. & Co., Ltd.
Garden City Paper Mills Co., Ltd.
Interlake Tissue Mills Co., Ltd.
Victoria Paper & Twine Co., Ltd.

Wrapping:
Beveridge Supply Co., Ltd.
Brompton Pulp & Paper Co., Ltd.
Can. Vegetable Parchment Co., Ltd.
Dryden Pulp & Paper Co., Ltd.
Eddy E. B. & Co., Ltd.
Garden City Paper Mills Co., Ltd.
Interlake Tissue Mills Co., Ltd.
Spanish River Pulp & Paper Mills.
Victoria Paper & Twine Co., Ltd.
Wayagamack Pulp & Paper Co., Ltd

Sulphite Mitscherlich:
Acer, J. H. A. & Co., Ltd.
American Woodpulp Corp.
Pulp and Paper Trading Co

THE QUALITY OF YOUR PRODUCT

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LET US DEMONSTRATE ITS EFFICIENCY

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Pont Rouge, Que., Can.

MILL SUPPLIES. — Continued.

Paper Bags:
Beveridge Supply Co., Ltd.
E. B. Eddy Co., Ltd.
Victoria Paper & Twine Co., Ltd.

Parchment Paper:
Can. Vegetable Parchment Co., Ltd

Paper Cores:
Elixman Paper Core Co.

Paper Cutting Machines:
Cameron Machine Co.
Walmsley, Charles & Co., Ltd.

Paper and Pulp Machinery.
American Voith Contact Co., Inc.
Beloit Iron Works.
Beveridge Supply Co., Ltd.
Bertrams, Ltd.
Black-Clawson Co.
Boving Hydraulic & Eng. Co., Ltd.
Cameron Machine Co.
Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Dowingtown Mfg. Co.
Hamilton Co., Ltd., Wm.
Hydraulic Machinery Co., Ltd.
Johnson Wire Works, Ltd.
Norwood Engineering Co.
Mackinnon Steel Co., Ltd.
McAvity & Sons, Ltd., T.
Mills Works & Machinery, Ltd.
Morrison, J. L. Co.
Port Arthur Shipbuilding Co., Ltd.
Pulp and Paper Mill Accessories, Ltd
Pusey & Jones Co.
Sherbrooke Machinery Co., Ltd.
Smith Morgan Co.
Stebbins Eng. & Mfg. Co.
Ticonderoga Machine Works.
Walsh Plate & Structural Works, Ltd.
Walmsley, Chas & Co.
Waterous Engine Works Co., Ltd
Wesbye, P .P.

Paper Stock:
Pulp & Paper Mill Accessories, Ltd.

Paper Testers:
Canadian Fairbanks-Morse Co., Ltd.
Perkins, B. F. & Son, Inc.
Waterous Engine Works Co., Ltd

Penstocks:
Dominion Engineering Works, Ltd.
Horton Steel Works, Ltd.
Hamilton, William Co., Ltd.
Hendrick Manufacturing Co.
MacKinnon Steel Co., Ltd.
Walsh Plate & Structural Works, Ltd.
White, W. H.

Penstocks, Wood Stave:
Canadian Pipe Company, Ltd.
Pacific Coast Pipe Co., Ltd.
White W. H.

Pillow Blocks:
Canadian Fairbanks-Morse Co., Ltd.
Canadian Link-Belt Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Victoria Foundry Co., Ltd.
Waterous Engine Works Co., Ltd

Pipe — Riveted:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.

Pipe — Wood Stave:
Canadian Pipe Company, Ltd.

Pipes — Brass & Copper:
Tallman Brass & Metal Co., Ltd.

Pipes — Steel:
Horton Steel Works, Ltd.

Piping — High Pressure:
Canadian Fairbanks-Morse Co., Ltd.
Crane, Ltd.
McAvity & Sons, Ltd., T.
Northern Foundry & Machine Co.

Piping Hydraulic:
Canadian Fairbanks-Morse Co., Ltd.
Dodge Manufacturing Co.
Hydraulic Machinery Co., Ltd.

Plate and Tank Works:
Can. Des Moines Steel Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Can. Chicago Bridge & Iron Co., Ltd.
Dominion Engineering Works, Ltd.
Goldie & McCulloch Co., Ltd.
Hamilton, William Co., Ltd.
Hendrick Manufacturing Co.
Horton Steel Works, Ltd.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Walsh Plate & Structural Works, Ltd
Waterous Engine Works Co., Ltd

Plates — Calenders:
Norwood Engineering Co.

Pneumatic Collecting and Conveying Systems:
Sturtevant, B. F. Co. of Canada, Ltd.

Pneumatic Thickeners:
Sherbrooke Machinery Co., Ltd.
Waterous Engine Works Co., Ltd

Pneumatic Tools:
Canadian Ingersoll-Rand Co., Ltd.

Power Factor Correcting Devices:
Griswold & Co.

Power Condensers:
Griswold & Co.

Presses:
Boving Hydraulic & Eng. Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Hydraulic Machinery Co., Ltd.
Northern Foundry & Machine Co.
Port Arthur Shipbuilding Co., Ltd.

Presses — Pulp:
Wm. R. Perrin, Ltd.

Press Rolls:
Bertrams, Ltd.
Dominion Engineering Works, Ltd.
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Sherbrooke Machinery C., Ltd.
Waterous Engine Works, Co. Ltd.

Pressure Tanks:
Steel Trough & Machine Co., Ltd.

Pulleys:
Boving Hydraulic & Eng. Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Canadian Link-Belt Co., Ltd.
Dominion Engineering Works, Ltd.
Hamilton, William Co., Ltd.
Northern Foundry & Machine Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Victoria Foundry Co., Ltd.
Waterous Engine Works, Co. Ltd.

Pulp Slashers:
Hamilton, William Co., Ltd.

Pulp Stones:
American Stone Co., Inc.
Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
International Pulp Stone. Co.
Lombard & Co.
Miramichi Quarry Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.
Smallwood Stone Co.
Smallwood-Low Stone Co.

Pulp Stone Burrs:
Can. Fairbanks-Morse Co., Ltd.

Pulp Thickeners:
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.
Sherbrooke Machinery Co., Ltd.

Pulp Wood:
Crittsinger, Burt C.
New Ontario Colonization Co., Ltd.

Pumps:
Bertrams, Ltd.
Boving Hydraulic & Eng. Co., Ltd.
Can. Fairbanks-Morse Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Carthage Machine Co.
Dominion Engineering Works, Ltd.
Downingtown Mfg. Co.
Goldie & McCulloch Co., Ltd.
Goold Shapley & Muir Co., Ltd.
Hydraulic Machinery Co., Ltd.
Hamilton, Wm. Co., Ltd.
Harland Engineering Co., Ltd.
Lawrence Machine Co.
McAvity, T. and Son.
Northern Foundry & Machine Co.
Ontario Wind Engine and Pump Co., Ltd.
Peacock Bros., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Smart-Turner Machine Co., Ltd.
Sherbrooke Machinery C., Ltd.
Victoria Foundry Co., Ltd.
Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co. Ltd.
Weir, Ltd., G. & J.

Pumps — Stock:
Canadian Blower & Forge Co., Ltd
Canadian Fairbanks-Morse Co., Ltd.

Pumps — Boiler Feed:
Canadian Allis-Chalmers, Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Goldie & McCulloch Co., Ltd.
Harland Engineering Co., Ltd.
McAvity, T. and Sons, Ltd.
Northern Foundry & Machine Co., Ltd.

Pyrometers:
The Bristol Co

Rag Cutter Knives:
Beveridge Supply Co., Ltd.
J. W. Bolton & Sons, Inc.
Pulp & Paper Mill Accessories, Ltd

Rails: — Re-laying:
Canadian Equipment Co., Ltd
Gartshore, J. J.

Recording Ammeters:
The Bristol Co.

Recording Instruments:
Canadian Fairbanks-Morse Co., Ltd.
The Bristol Co.
Peacock Bros., Ltd.

Recording Wattmeters:
The Bristol Co.
American Voith Contact Co., Inc.

Refiners:
Bertrams, Ltd.
Boving Hydraulic & Eng. Co., Ltd
Can. Fairbanks-Morse Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Sherbrooke Machinery Co., Ltd.
Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co. Ltd

Regulators — Steam.
Beveridge Supply Co., Ltd.
Pickles, W. F.
The Under-Feed Stoker Co. of Canada, Limited.

Regulators:
Mills Works & Machinery, Ltd.
The Under-Feed Stoker Co. of Canada Limited.

Reverse Gears:
Canadian Fairbanks-More Co., Ltd.
Russel Brothers.

Rock Drills:
Canadian Ingersoll-Rand Co., Ltd.

Rods — Copper, Brass and Bronze:
Imperial Trading Co.
Tallman Brass & Metal, Ltd.

Rods — Welding:
Tallman Brass & Metal, Ltd.

Roll-Winding Machines:
Cameron Machine Co.
Port Arthur Shipbuilding Co., Ltd.

Roofings — Plastic and Liquid:
Barrett Co., Ltd.
Beveridge Supply Co., Ltd.
Can. Johns-Manville Co., Ltd.
Reed & Co., Ltd., Geo. W.

Rope:
Jones & Glassco.
Goldie & McCulloch Co., Ltd.

Rosin Size:
Hercules Naval Stores
Vera Chemical Co. of Canada, Ltd
Wilson Paterson Co.

Rotary Cutter Knives:
J. W. Bolton & Sons, Inc.
Pulp and Paper Mill Accessories, Ltd

Rotary Sulphur Furnaces:
MacKinnon Steel Co., Ltd.
Stebbins Eng. & Mfg. Co.

Safes:
Can. Fairbanks-Morse Co., Ltd.
Goldie & McCulloch Co., Ltd.

Salt:
The Canadian Salt Co., Ltd.

Salt Cake:
M. Gottesman & Co., Inc.
The Kalbfleisch Corporation

Save-Alls:
Canadian Ingersoll-Rand Co., Ltd.
MacKinnon Steel Co., Ltd.
Pulp and Paper Mill Accessories, Ltd.
Port Arthur Shipbuilding Co., Ltd.
Sherbrooke Machinery Co., Ltd.
Waterous Engine Works, Co. Ltd.

Slitters and Rewinders:
Cameron Machine Co.
Port Arthur Shipbuilding Co., Ltd.

Saw Frames:
Can. Fairbanks-Morse Co., Ltd.
Goold Shapley & Muir Co., Ltd.
Ontario Wind Engine and Pump Co. Ltd.
Waterous Engine Works, Co., Ltd.

Scales:
Can. Fairbanks-Morse Co., Ltd.
International Bus. Machines Co. Ltd

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MILL SUPPLIES. — Continued.

Screen Plates:
Bertrams, Ltd.
Union Screen Plate Co. of Canada
Sherbrooke Machinery Co., Ltd.
Waterous Engine Works, Co., Ltd.

Screens:
American Voith Contact Co., Inc.
Bertrams, Ltd.
Boving Hydraulic & Eng. Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Can. Fairbanks-Morse Co., Ltd.
Can. Link-Belt Co., Ltd.
Hamilton, William Co., Ltd.
Hendrick Manufacturing Co.
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Pulp and Paper Mill Accessories, Ltd.
Sherbrooke Machinery Co., Ltd.
Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co., Ltd.
Westbye, P. P.

Separators — Oil:
Canadian Fairbanks-Morse Co., Ltd.
Goldie & McCulloch Co., Ltd.

Separators — Steam:
Canadian Fairbanks-Morse Co., Ltd.
Crane Co., Ltd.
Foxboro Co., Inc.
Peacock Bros., Ltd.

Shafting:
Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Northern Foundry & Machine Co., Ltd
Victoria Foundry Co., Ltd.
Waterous Engine Works, Co. Ltd

Sheet Lead:
The Canada Metal Co., Ltd.

Sheets — Copper, Brass and Bronze:
McAvity & Sons, Ltd., T.
Tallman Brass & Metal, Ltd.

Sheet Samplers:
John Date.

Shingle Machines:
Canadian Fairbanks-Morse Co., Ltd.
Victoria Foundry Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.

Shower Pipes:
Dominion Engineering Works, Ltd.
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.

Shredders:

Size:
Vera Chemical Co., Ltd.

Slab Chippers:
Boving Hydraulic & Eng. Co., Ltd.
Waterous Engine Works, Co., Ltd.

Slitters and Re-Winders:
Bertrams, Ltd.
Cameron Machine Co.
Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Langston Co., Samuel M.
Morrison, The J. L. Co.
Ticonderoga Machine Works.
Walmsley, Charles & Co., Ltd.

Slitting and Roll-Winding Machines:
Cameron Machine Co.

Sinks & Tops — Laboratory, Acid Proof:
Alberene Stone Co.

Smelter Lining:
Alberene Stone Co.
Beveridge Supply Co., Ltd

Smoke Stacks:
Can. Des Moines Steel Co., Ltd.
Dominion Engineering Works, Ltd.
Hamilton Co., Wm.
Hendrick Manufacturing Co.
Horton Steel Works, Ltd.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
The Steel Trough & Machine Co., Ltd.
Waterous Engine Works, Co., Ltd.

Snow Plows:
Canadian Equipment Co., Ltd.

Soda Ash:
Wilson, Paterson Co

Soot Cleaners:
Beveridge Supply Co., Ltd.

Solder:
Canada Metal Co.
McAvity T. & Son.
Tallman Brass & Metal, Ltd.

Spiral Conveyors:
Canadian Fairbanks-Morse Co., Ltd.
Can. Link-Belt Co., Ltd.
Waterous Engine Works, Co., Ltd.

Splicing Tissue:
Bemis Manufacturing Associates.

Splitters:
Carthage Machine Co.
Hamilton, William Co., Ltd.

Split Pulleys — Wood and Steel:
Canadian Fairbanks-Morse Co., Ltd.
Waterous Engine Works, Co., Ltd.

Sprinkler Tanks:
Can. Des Moines Steel Co., Ltd.
Hendrick Manufacturing Co.
Horton Steel Works, Ltd.

Sprocket:
Canadian Fairbanks-Morse Co., Ltd.
Can. Link-Belt Co., Ltd.
Hamilton Gear & Machine Co.
Hamilton, William Co., Ltd.
Northern Foundry & Machine Co.
Sherbrooke Machinery Co., Ltd.
Waterous Engine Works, Co., Ltd.

Stacks:
Dominion Engineering Works, Ltd.
Hamilton, William Co., Ltd.
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.

Stackers:
Canadian Link-Belt Co., Ltd.

Tanks — Iron and Steel:
Horton Steel Works, Ltd.
MacKinnon Steel Co., Ltd.
Walsh Plate & Structural Works, Ltd.
Waterous Engine Works, Co., Ltd.

Steam Appliances:
Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
McAvity, T. and Son.
Pulp & Paper Mill Accessories, Ltd.
Waterous Engine Works, Co., Ltd.

Steam Engines:
Port Arthur Shipbuilding Co., Ltd.
Sturtevant Co. of Canada, Ltd., B. F.
Walmsley, Charles & Co., Ltd.

Steam Regulator:
Beveridge Supply Co., Ltd.
Crane Co., Ltd.
McAvity, T. & Son.

Steam Specialties:
Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Crane Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.
Waterous Engine Works, Co. Ltd.

Steam Shovels:
Canadian Equipment Co., Ltd.

Steel Barrels:
Dominion Engineering Works, Ltd.

Steel Factory Equipment:
Steel Trough & Machine Co., Ltd.

Steel Plate Construction:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.

Steel Storage Tanks:
Steel Trough & Machine Co., Ltd.

Steel Shop Boxes:
Steel Trough & Machine Co., Ltd.

Steam Turbines:
Canadian Fairbanks-Morse Co., Ltd.
Goldie & McCulloch Co., Ltd.
Sturtevant, B. F. Co. of Canada, Ltd.

Stokers — Mechanical:
Babcock & Wilcox, Ltd.
Combustion Engineering Corporation Limited.
The Under-Feed Stoker Co. of Canada, Limited.

Stones — Pulp:
American Stone Co.
Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
International Pulp Stone Co.
Lombard & Co.
Miramichi Quarry Co.
Pulp & Paper Mill Accessories, Ltd.
Smallwood Stone Co.
Smallwood-Low Stone Co.

Stoneware — Chemical, Acid-Proof:
Alberene Stone Co.
Beveridge Supply Co., Ltd.

Stop Log Winches:
Dominion Engineering Works, Ltd.
Hamilton Co., Wm.
Northern Foundry & Machine Co., Ltd.
Foundry, Ltd.

Strainers — Water:
Can. Link-Belt Co., Ltd.
Babcock & Wilcox, Ltd.

Straw Cutters:
Bertrams, Ltd.
Can. Des Moines Steel Co., Ltd.
Dominion Engineering Works, Ltd.
MacKinnon Steel Co., Ltd.

Structural Steel Works:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.
Walsh Plate & Structural Works, Ltd.

Stuff Chests:
Can. Des Moines Steel Co., Ltd.
Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co., Ltd.

Suction Rolls:
Dominion Engineering Works, Ltd.
Hydraulic Machinery Co., Ltd.

Sulphate of Alumina:
H. D. Pochin & Co., Ltd.
Gottesman, M. & Co., Inc.
Imperial Trading Co.
The Kalbfleisch Corporation
Wilson — Paterson Co.

Sulphite Mill Equipment:
Alberene Stone Co.
Beveridge Supply Co., Ltd.
Dominion Engineering Works, Ltd
Hamilton, William Co., Ltd.
Hydraulic Machinery Co., Ltd.
MacKinnon Steel Co., Ltd.
McAvity, T. & Son.
Port Arthur Shipbuilding Co., Ltd.
Walsh Plate & Structural Works, Ltd
Waterous Engine Works, Co., Ltd.

Sulphite Pulp:
Mattagami Pulp & Paper Co., Ltd.

Sulphate Mill Equipment:
Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Hamilton, William Co., Ltd.
MacKinnon Steel Co., Ltd.
McAvity, T. & Son.
Port Arthur Shipbuilding Co., Ltd.
Stebbins Eng. & Mfg. Co.
Texas Gulf Sulphur Co.
Walsh Plate & Structural Works, Ltd
Waterous Engine Works, Co., Ltd.

Sulphite Mitscherlich:
M. Gottesman & Co.

Sulphur:
Union Sulphur Co.
Texas Gulf Sulphur Company.

Sulphur Burners:
Hydraulic Machinery Co., Ltd.
Carthage Machine Co.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Stebbins Eng. & Mfg. Co.
Walsh Plate & Structural Works, Ltd
Waterous Engine Works, Co., Ltd.
Walsh Plate & Structural Works, Ltd

Superheaters — Steam:
Babcock & Wilcox, Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Goldie & McCulloch Co., Ltd.

Switchboards:
Canadian Fairbanks-Morse Co., Ltd.
Canadian General Electric Co., Ltd.
Harland Eng. Co., Ltd.
Northern Electric Co., Ltd.

Tanks:
Canadian Ingersoll-Rand Co., Ltd.
Can. Des Moines Steel Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Can. Chicago Bridge & Iron Co., Ltd.
Canadian Pipe Co., Ltd.
Dominion Engineering Works, Ltd.
Goldie & McCulloch Co., Ltd.
Goold Shapley & Muir Co., Ltd.
Hamilton, Wm. Co., Ltd.
Hendrick Manufacturing Co.
Horton Steel Works, Ltd.
Ontario Wind Engine and Pump Co. Ltd.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd
Pacific Coast Pipe Co., Ltd.
Reed Co., Ltd., Geo. W.
The Steel Trough & Machine Co., Ltd.
Toronto Iron Works, Ltd.
Victoria Foundry

Tanks — Acid:
Hendrick Manufacturing Co.
White, W. H.
Walsh Plate & Structural Works, Ltd.

Tanks — Elevated — Steel:
Horton Steel Works, Ltd.

Tanks — Lead Lined:
Barber, W. J. & Co.

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MILL SUPPLIES. — Continued.

Tanks: Iron & Steel:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.

Tanks — Welded:
Can. Des Moines Steel Co., Ltd.
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.

Tanks — Ore:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.
Smart-Turner Machine Co., Ltd., The Waterous Engine Works, Co., Ltd.

Tanks — Storage:
Hendrick Manufacturing Co.
Ontario Wind Engine and Pump Co. Ltd.
Port Arthur Shipbuilding Co., Ltd.

Tanks — Wood:
Canadian Pipe Company, Ltd.
Pacific Coast Pipe Co.
Goold, Shapley & Muir Co., Ltd.
Ontario Wind Engine and Pump Co Ltd.
Port Arthur Shipbuilding Co., Ltd.
White, W. H.

Telephone — Automatic:
Northern Electric Co., Ltd.

Telephone — Apparatus:
Northern Electric Co., Ltd.

Temperature Controllers:
The Bristol Co.

Temperature Instruments:
The Bristol Co.
Canadian Fairbanks-Morse Co., Ltd.

Testers — Green Stock:
John Date.

Tanks, Steel, Pressure and Storage.
Hendrick Manufacturing Co.
Horton Steel Works, Ltd.

Timberland Brokers:
Crittsinger, Burt C.
Can. Woodland & Pulp Agency
Lacey, James D. & Co.

Thermometers:
The Bristol Co.
Canadian Fairbanks-Morse Co., Ltd.
Canadian Ingersool-Rand Co., Ltd.

Thrust Bearings:
Canadian Fairbanks-Morse Co., Ltd.
Kingsbury Machine Works.

Tissue — Splicing:
Bemis Manufacturing Associates.

Towers:
Horton Steel Works, Ltd.
Hendrick Manufacturing Co.
Walsh Plate & Structural Works, Ltd.

Tower Linings:
Beveridge Supply Co., Ltd.
Stebbins Eng. & Mfg. Co.

Transformer:
Northern Electric Co., Ltd.

Transmission Machinery:
Boving Hydraulic & Engineering Co. Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Can. Link-Belt Co., Ltd.
Hamilton Co., Ltd., Wm.
Port Arthur Shipbuilding Co., Ltd.
Renold of Canada, Ltd., Hans.
Waterous Engine Works, Co., Ltd.

Traps — Steam:
Can. Johns-Manville Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Crane Co., Ltd.
Goldie & McCulloch Co., Ltd.
Sturtevant, B. F. Co. of Canada, Ltd.

Travelling Cranes:
Boving Hydraulic & Eng. Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Smart-Turner Machine Co., Ltd.

Trolleys:
Boving Hydraulic & Eng. Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Northern Crane Works, Ltd.
Smart-Turner Machine Co., Ltd.
Waterous Engine Works, Co., Ltd.

Troughs:
Hendrick Manufacturing Co.

Trucks:
Hamilton Gear & Machine Co.
Canadian Fairbanks-Morse Co., Ltd.
Northern Crane Works, Ltd.

Trucks — Pulp:
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd

Tubes — Copper, Brass, Bronze:
Tallman Brass & Metal, Ltd.
McAvity & Sons, Ltd., T.

Tubes Cleaners:
Babcock & Wilcox, Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.

Turbines:
Boving Hydraulic & Eng. Co., Ltd.
Dominion Engineering Works, Ltd.
Goldie & McCulloch Co., Ltd.
Hamilton Co., Ltd., Wm.
Smith, S. Morgan.
Sturtevant Co. of Canada, Ltd., B. F
Terry Steam Turbines Co.

Twine:
Beveridge Supply Co., Ltd.
Victoria Paper & Twine Co., Ltd.

Valves:
Canadian Fairbanks-Morse Co., Ltd.
Crane Co., Ltd.
Diamond State Fibre Co. of Can., Ltd.
Jenkins Bros., Ltd.
Goldie & McCulloch Co., Ltd.
Hydraulic Machinery Co., Ltd.
McAvity T. and Son.
Northern Foundry & Machine Co.
Port Arthur Shipbuilding Co., Ltd.
Smart-Turner Machine Co., Ltd.
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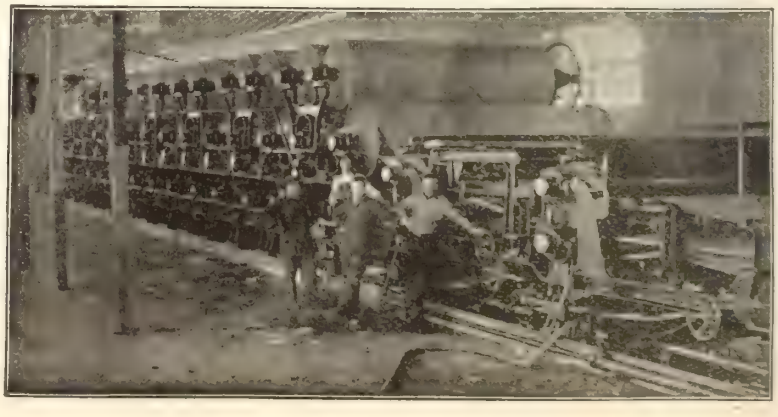
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ALPHABETICAL LIST OF ADVERTISERS

See Classified List on Page 73

Unpaged advertisements appear in every other issue

A

Alberene Stone Co., Ltd.
Abitibi Power & Paper Co. Ltd. 84
Acer, J. A. H. & Co., Ltd. 74
American Voith Contact Co., Inc.
American Stone Co. 24
American Woodpulp Corporation 24
Ayers, Limited 11

B

Babcock & Wilcox, Ltd. 3
Barrett Co., Ltd., The 10
Barber, W. J. & Co., Ltd. 22
Bathurst Company, Ltd. 82
Bates & Innes, Ltd. 25
Beloit Manufacturing Association 30
Bertrams, Limited
Belgo Paper Co., Ltd., The 82
Beveridge Supply Co., Ltd.
Black-Clawson Co., The
Boivin, Louis
Bolton, John W. & Sons, Inc. 26
Boving, Hydraulic & Engineering Company, Ltd.
Bristol Co., The 80
Brompton Pulp & Paper Co., Ltd. 82
Burgess, E. T.

C

Canada Metal Co., Ltd. 30
Cameron Machine Co. 69
Canadian Combustion Co., Ltd.
Canadian Barker Co.
Canada Foundries & Forgings, Ltd. 72
Canadian Des Moines Steel Co., Ltd. 16
Canadian Elixman Co., Ltd.
Canadian Equipment Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd. 32
Canadian Ingersoll-Rand Co., Ltd.
Canadian Milk Products, Ltd.
Canadian Johns-Manville Co., Ltd. 19
Canadian Nashua Paper Co., Ltd.
Canadian Paperboard Co., Ltd. 24
Canadian Link-Belt Co., Ltd.
Canadian Robert Dollar Co., Ltd.
Canadian Pipe Co., Ltd. 72
Canadian Sirocco Co., Ltd.
Canadian S K F Co., Ltd.
Canadian Vegetable Parchment Co, Limited
Canadian Westinghouse Co., Ltd.
Carey, Jas. L. 22
Capital Wire Cloth & Mfg. Co., Ltd. 26
Christie, George, Ltd. 80
City of Hull
Claflin Engineering Co., The 22
Clayton, Neil & Jones, Ltd. 24
Combustion Engineering Corporation, Ltd. 5
Crane, Ltd.
Crittsinger, Burt Co., Inc. 68
Cleveland Stone Co., The

D

Date, John 69
Deitcher Brothers 87
Dept. of Lands, Forests & Mines Ontario 67
Dodge Mfg. Co. of Canada, Ltd.
Dominion Belting Co. 70
Dominion Engineering Works, Ltd. 1
Dominion Oxygen Co., Ltd. 18
Donnacona Paper Co., Ltd., The 24
Don Valley Paper Co., Ltd., The 24
Downingtown Mfg. Co. 25
Dryden Paper Co., Ltd. 24
Dunlop Tire & Rubber
Dunham, C. A. Co.

E

Elixman Paper Core Co., Inc.
Elk Fire Brick Co., of Canada, Ltd.
English China Clays, Ltd.
Engineering & Machine Works of Canada, Ltd. 17

F

Ferguson, H. S. 23
Ford, J. & Co. 74
Foundation Co., Ltd. 22

G

Galt Knife Co., Ltd. 27
Garden City Paper Mills, Ltd.
Geigy Co., Inc. 72
Goldie & McCulloch Co., Ltd. 89
Goold, Shapley & Muir Co., Ltd. 26
Gottesman, M. & Co. 29
Grasselli Chemical Co., Ltd., The
Graton & Knight Mfg. Co., Ltd. 71
Griswold & Co.
Gutta Percha & Rubber, Ltd. 12

H

Hamblet Machine Co. 68
Hamilton Gear & Machine Co. 65
Hamilton, Wm. Co. of Canada, Ltd. 89
Hans Renold of Canada, Ltd.
Hardy, George F. 22
Harland Engineering Co. of Canada, Limited
Hay Knife Co., Ltd., Peter 69
Hendrick Mfg. Co.
Hercules Powder Co.
Holliday, L. B. & Co., Ltd.
Huestis, A. M.
Hydraulic Machinery Co., Co., Ltd. 4

I

Ideal Patents Corporation 20
Industrial Engineering Co., Ltd. 86
International Business Machines Co., Ltd. 23
International Pulp Stone Co., The 27
Interlake Tissue Mills, Ltd.

J

Jenkins Brothers, Ltd.
Jenssen Co., G. D. 23
Johnson Wire Works, Ltd., The 30
Jones & Glassco, Regd.

K

Kalbfleisch Corporation, The
Kander Paper Stock Co., Ltd., The 24
Kenwood Mills, Ltd. 13
Kimball, Herbert S. 23
Kingsbury Machine Works
Klipstein & Co., Ltd. A.

L

Lacey, James D. & Co. 68
Largeloef Trading Co. 65
Langston, Samuel M. Co. 27
Laurentide Co., Ltd. 84
Lawrence Machine Co.
Lombard & Co. Inc. 27

M

Management Engineering & Development Co., The 23
Mead, Patton & Co., Ltd.
McAvity, T. & Co., Ltd.
McKinnon Steel Co., Ltd. 87
Mills Works & Machinery, Ltd. 80
Miramichi Quarry Co., Ltd., The 70
Montabone, J. A. F.
Montreal Locomotive Works, Ltd. 79
Morrison, J. L. Co. 78

N

National Paper Stock Co., The 24
Niagara Wire Weaving Co., Ltd. The 74
Northern Crane Works, Ltd. 69
Northern Electric Co., Ltd.
Northern Foundry & Machine Co. 21
Norwood Engineering Co. of Canada, Limited 26

O

Oliver Continuous Filter Co. 7
Ontario Wind Engine & Pump Co., Limited

P

Pacific Coast Pipe Co., Ltd. 69
Patton, Mead & Co., Inc.
Peacock Brothers, Ltd. 71
Penmans Limited 20
Pollack Bros. & Co., Ltd. 2
Port Arthur Shipbuilding Co., Ltd. 29
Porritts & Spencer Co., Ltd. 74
Price Bros. & Co., Ltd.
Price & Pierce, Ltd. 82
Provincial Paper Mills, Ltd. 76
Pusey & Jones Co., Ltd.
Pulp & Paper Trading Co., Ltd. 68
Pulp & Paper Mill Accessories, Ltd. 85

Q

Quarries, C. & M Co. 22

R

Reed, Geo. W. & Co., Ltd
Relph, Darwen & Pearce 86
Rolland Paper Co., Ltd.
Ross Engineering of Canada Ltd. 27
Russell Brothers 72

S

Sadler & Haworth 2
Sewall, Jas. W. 22
Sherbrooke Machinery Co. 8-9
Smallwood Stone Co., The 24
Smallwood Low Stone Co., Ltd. 27
Smith Howard Paper Mills, Ltd. 78
Spanish River Pulp & Paper Mills, Limited 86
Steel Trough & Machine Co., Ltd. 72
Sterling Electrical Co., 22
Stinson-Reeb Builders' Supply Co., Limited
Stebbins Engineering & Mfg. Co. 22
St. Maurice Paper Co., Ltd. 69
Sturtevant Co. of Canada, Ltd. 69

T

Tallman, Brass & Metal, Ltd.
Taylor, J. A. 89
Taylor, H. S., Ltd. 23
Texas Gulf Sulphur Co. 32
Ticonderoga Machine Works
Tippett & Co., Ltd. 28
Tyler, W. S. Co., The 27
Trimbey Machine Works 16

U

Underfeed Stoker Co. of Can. Ltd.
Union Screen Plate Co. of Canada, Limited 87
Union Sulphur Co., The 30
United Wire Works Ltd. 28

V

Vera Chemical Co. of Canada 72
Victoria Foundry Co., Ltd. 28
Voorhees Rubber Mfg., Ltd. 26

W

Wallace, John H. & Co., Ltd. 22
Wardlaw, T. D. & Son 72
Walmsley, Charles & Co., Ltd. 14-15
Warren, Kenneth L. 22
Warwick Woollen Mills, Ltd. 23
Watford Engineering Works, Ltd.
Waterous Engine Works 90
Wayagamack Pulp and Paper Co., Limited
Weir, G. & J. (Canada), Ltd. 71
Westbye, P. P.
White, W. H. 22
Whyte, William 22
Wilson Patterson Co., Ltd. 69
Wood Pulp Trading Co., Ltd. 66

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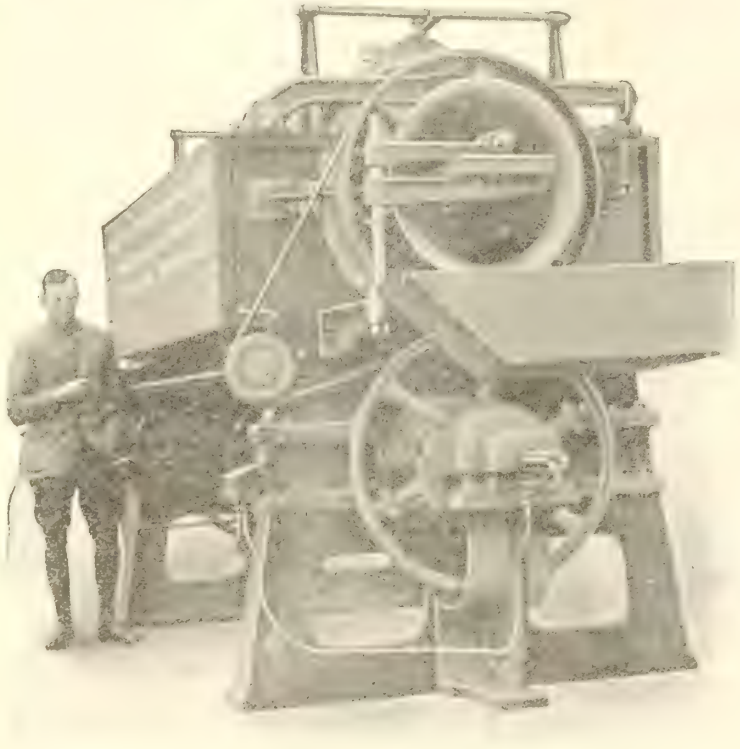
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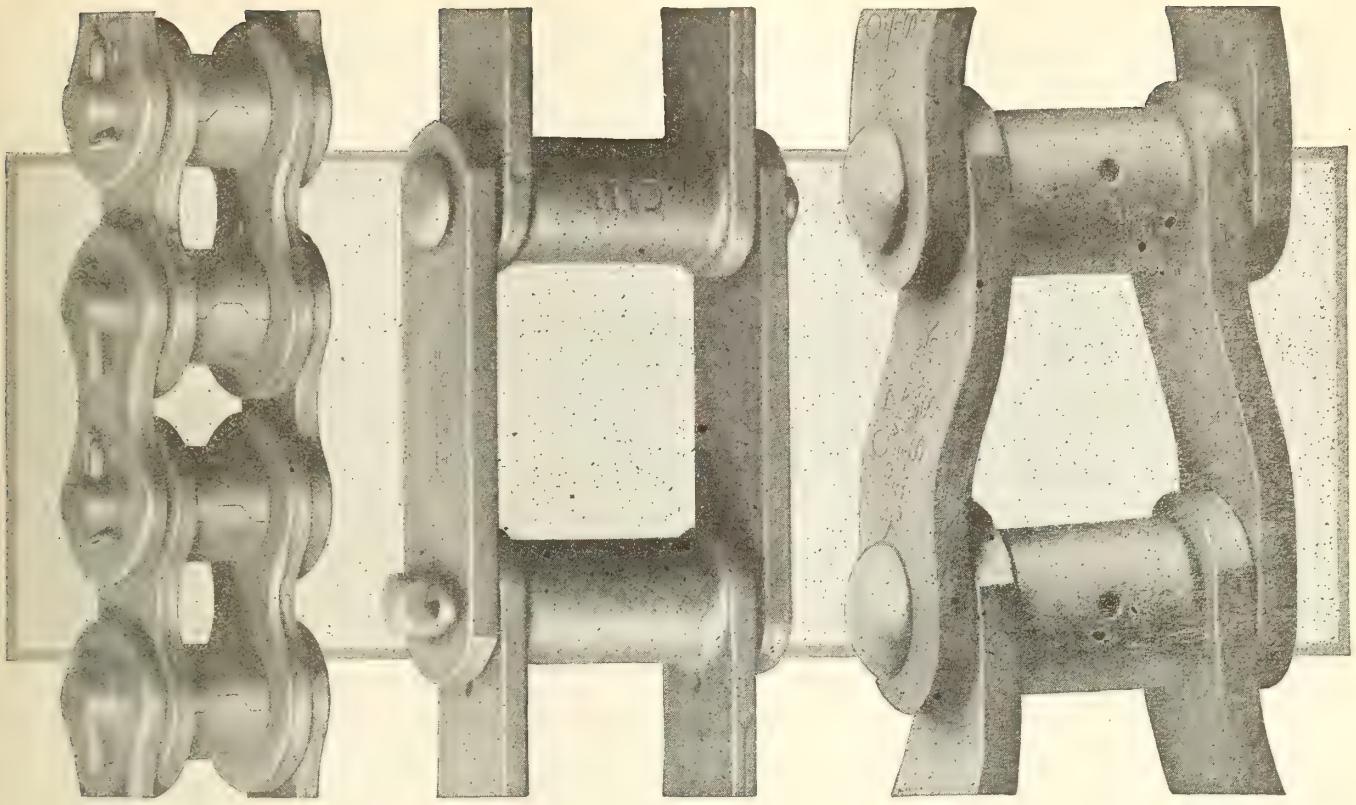
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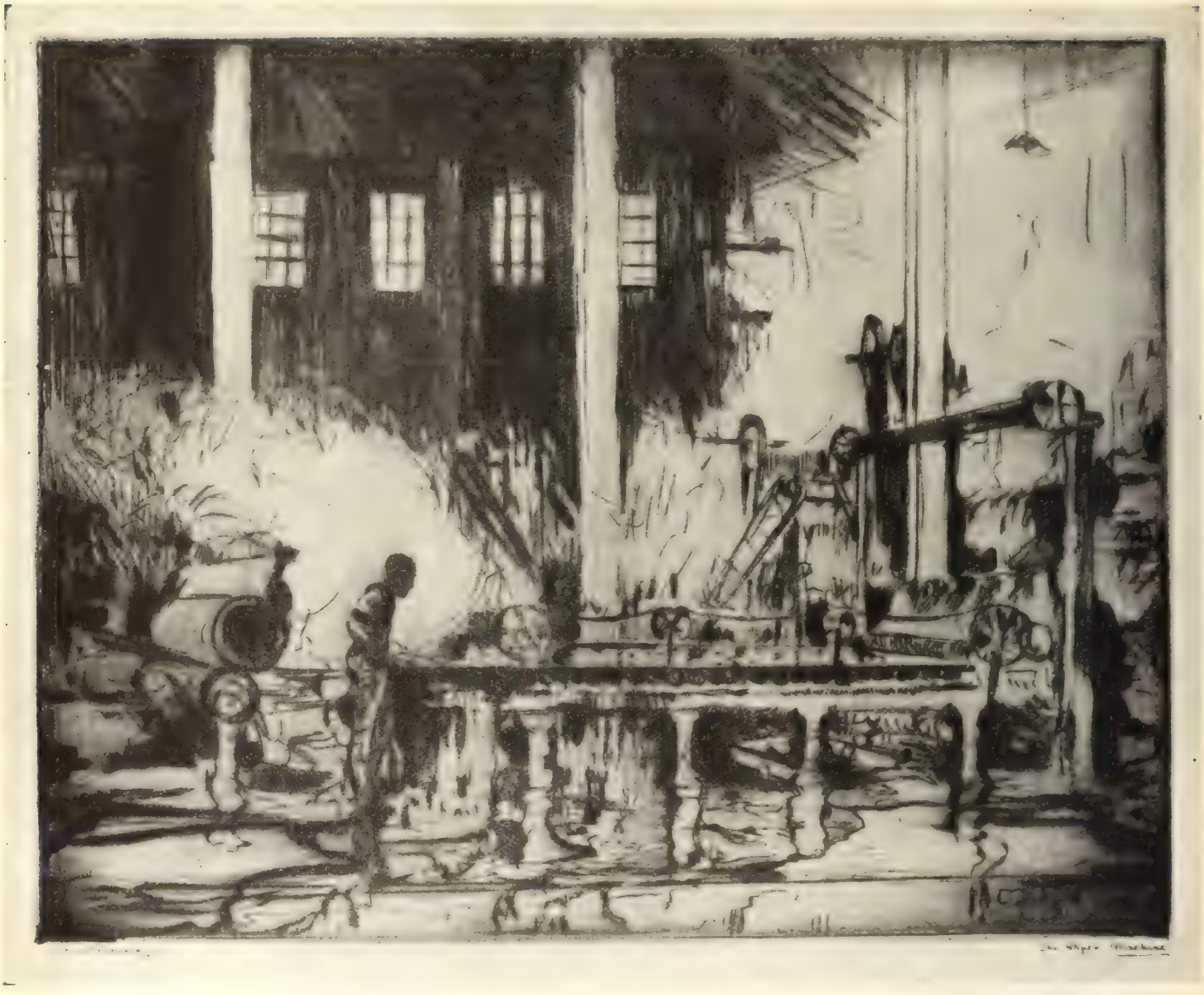
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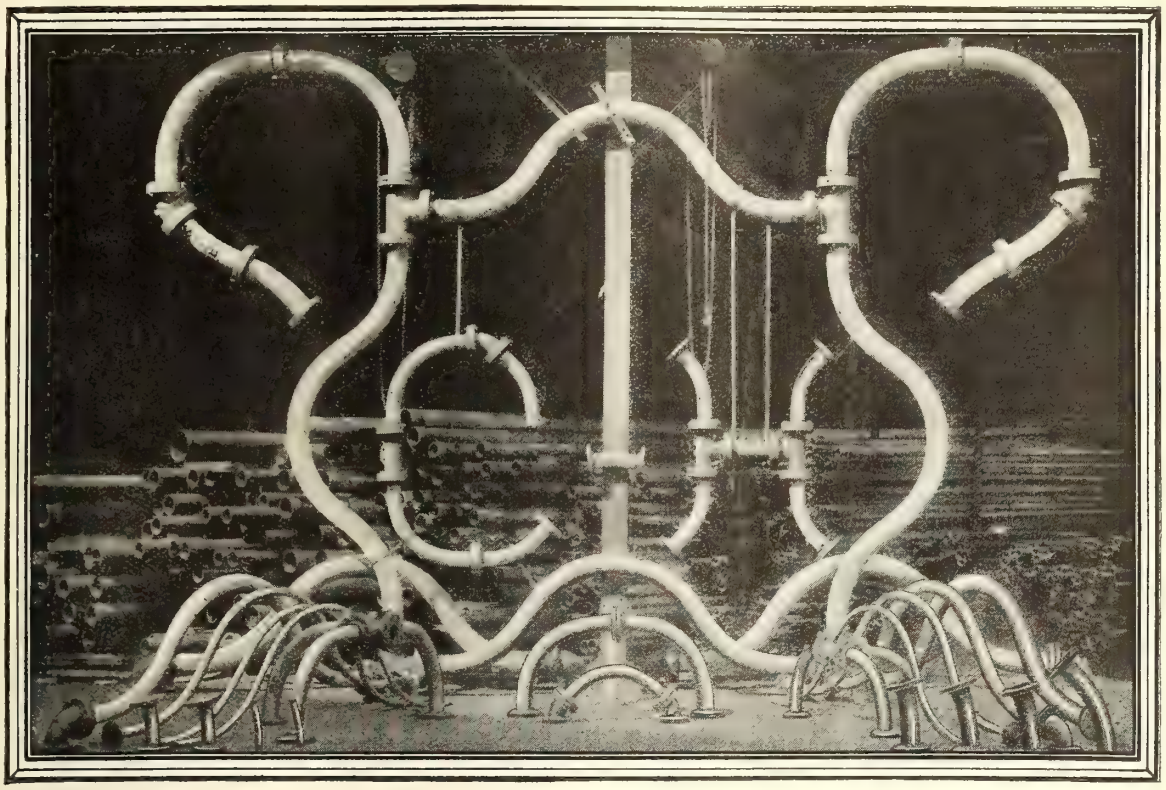
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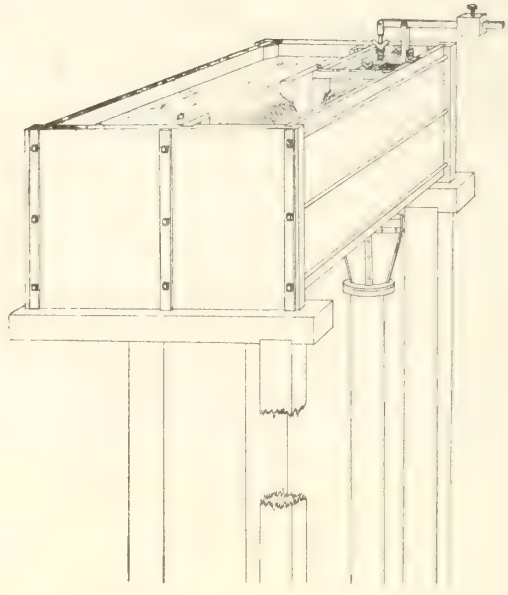
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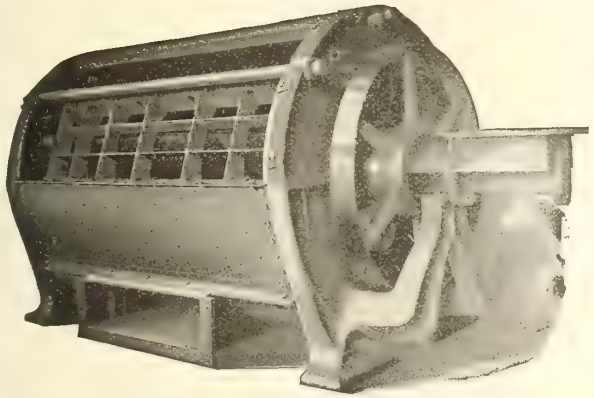
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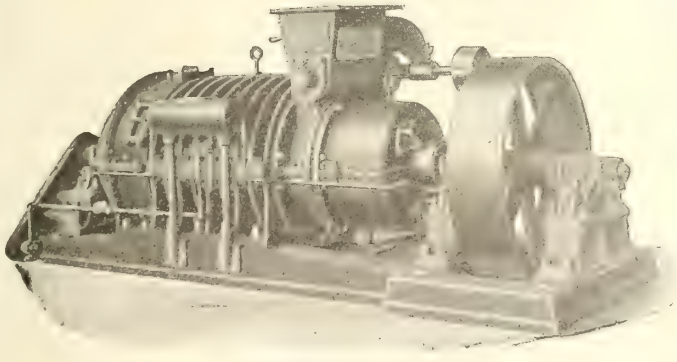


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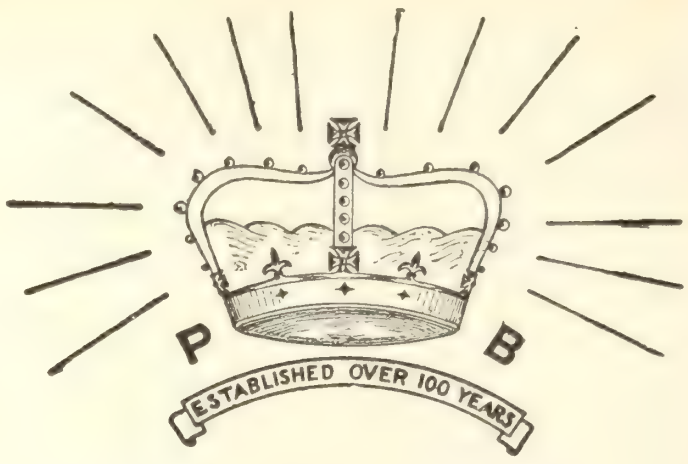
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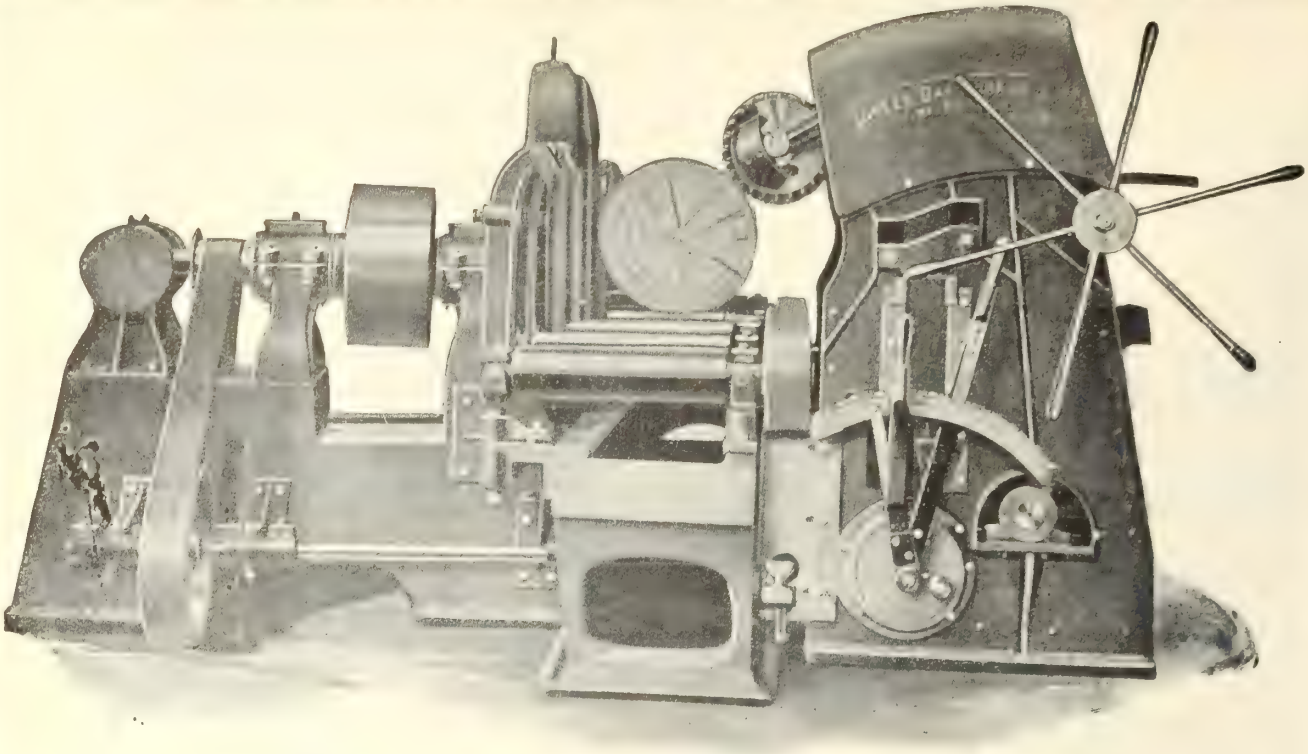
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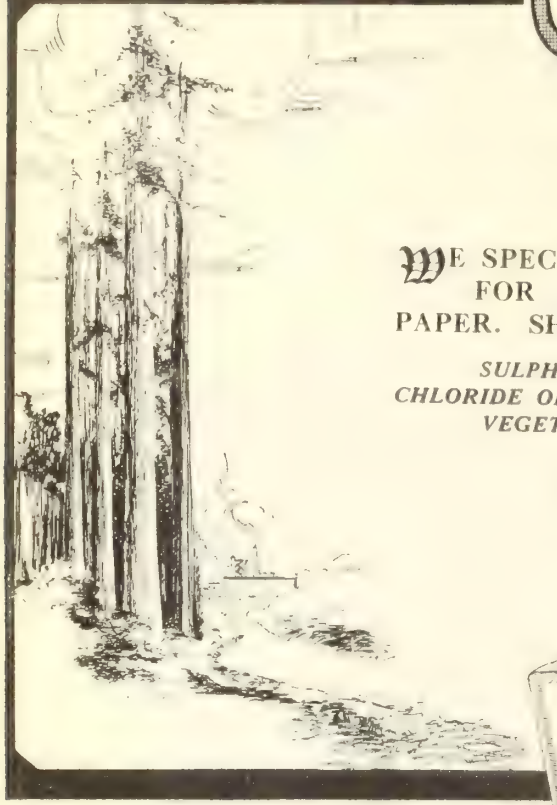
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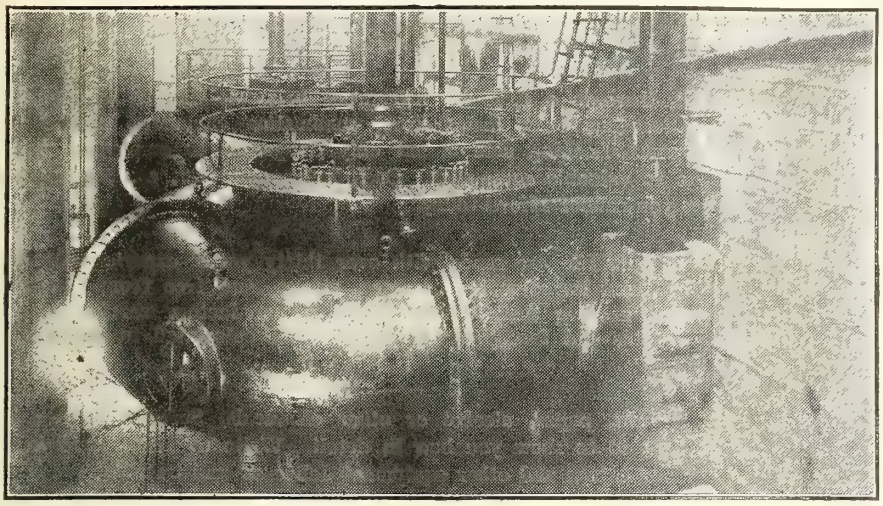


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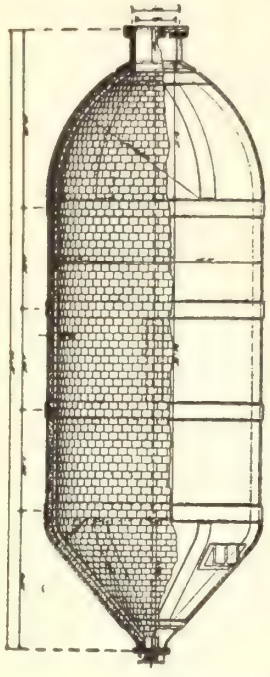
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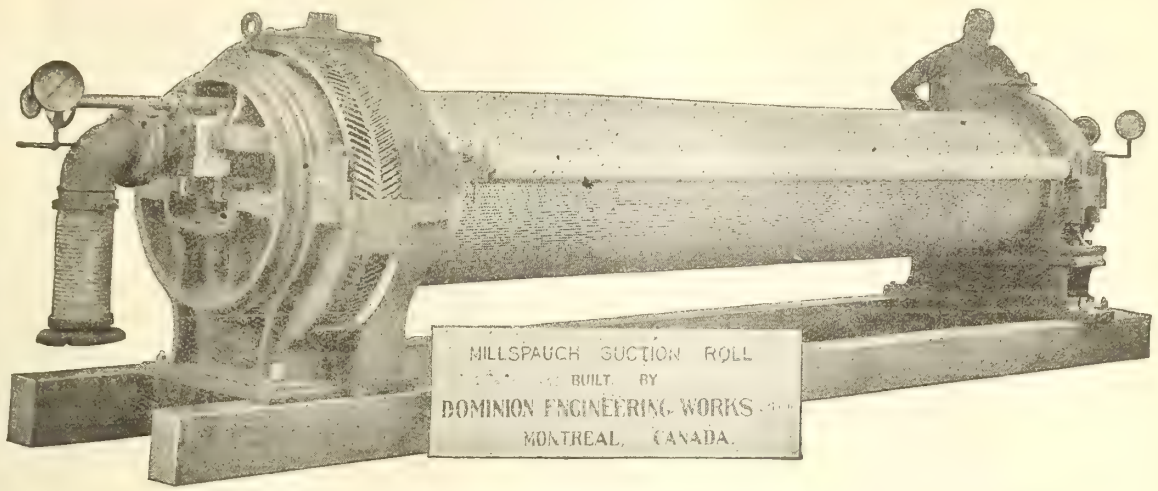
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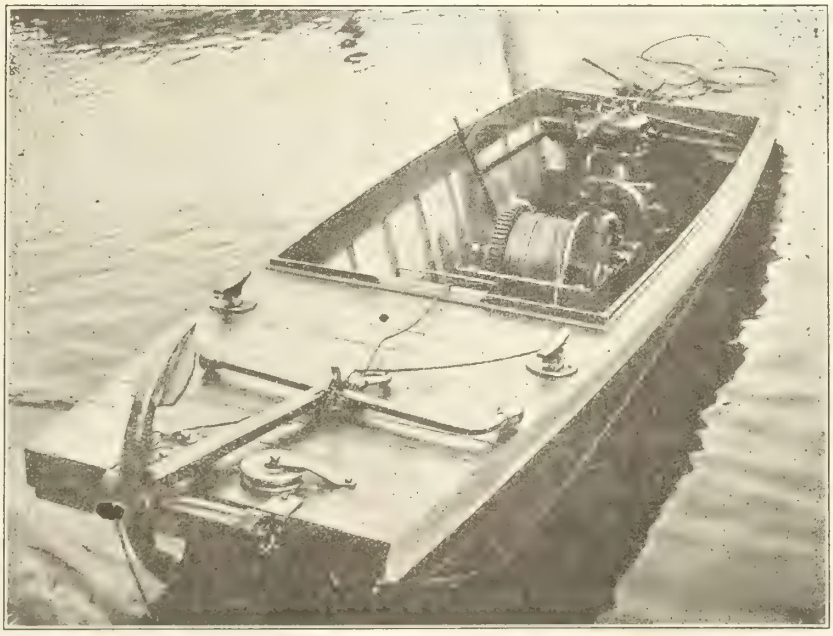
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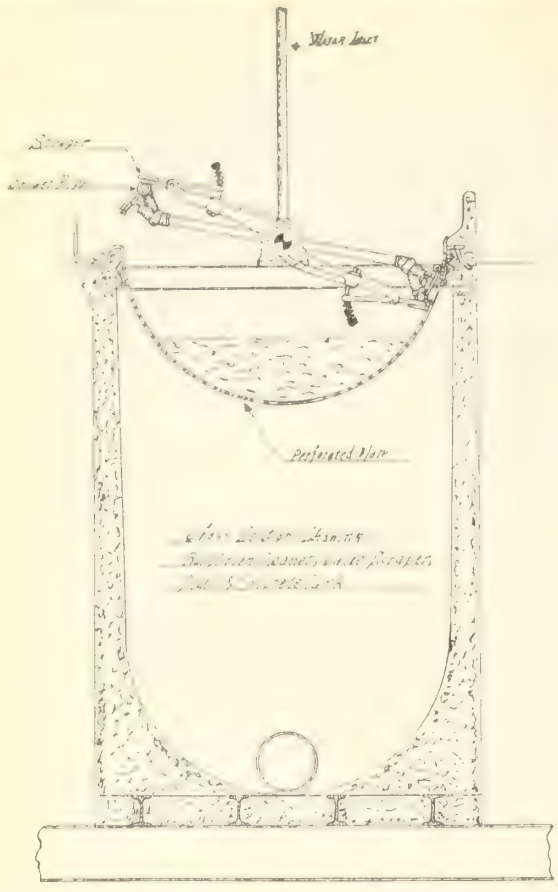


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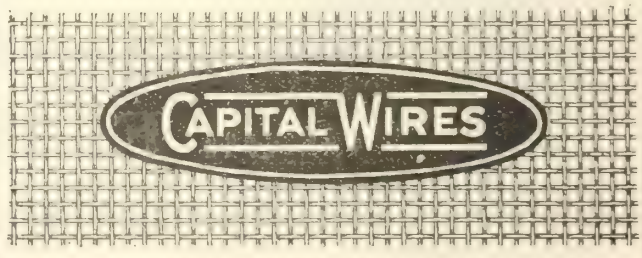
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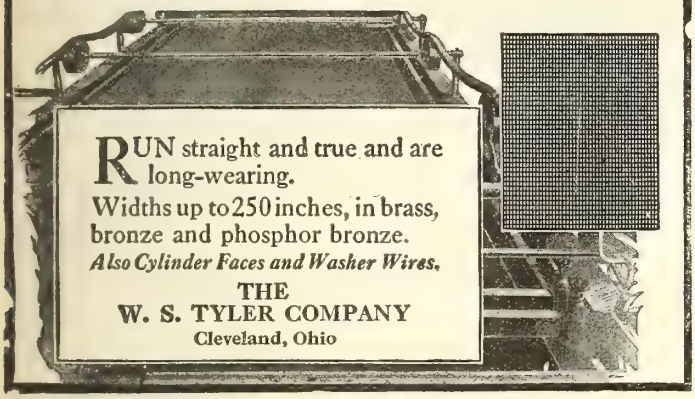
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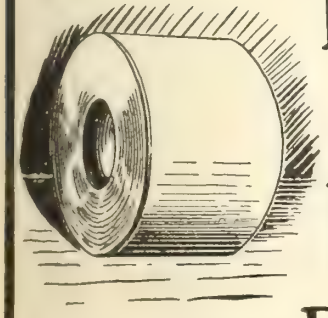
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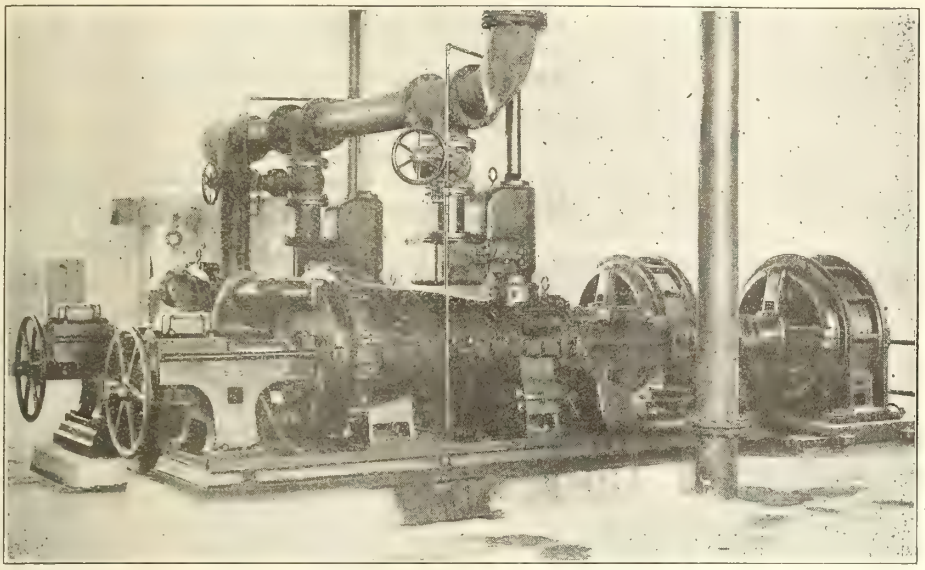
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A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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TABLE OF CONTENTS

Editorial:

Enormous income threatened 593
Government aroused at last 593
Forest fire peril 594

Special Articles:

Waste in the generation and use of steam . 595
Pulp and paper exports from Scandinavia 599
What the paper mill apprentice did in 1823 601
Institute items 605

News of the Industry:

Wayagamack social service work 500
Newsprint production in April 602
A Canadian's impression of Australian trade . . 603
William I. Bishop a busy firm 604
Earnings of Belgo Paper Co. 604
Pulp and paper news 608
Harmsworth Mills acquire sulphite plant . . 608
Printers visit paper mills 609
Becker & Company, Ltd. 609
Summer school at Maine 609
Sir W. Price may join Riordon board 610
United States notes 611

Miscellaneous Information:

Nova Scotia coal for Quebec Province 597
Treatment of straw 502
Kraft for printing 602
Every day dangers 604
Effect of furfural on pulp 605
Trouble with wire seam 605
A short story 605
Review of recent literature 606
Fiber board manufacture 614

The Markets:

Canadian trade conditions 612
New York markets 612

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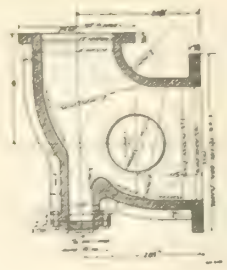
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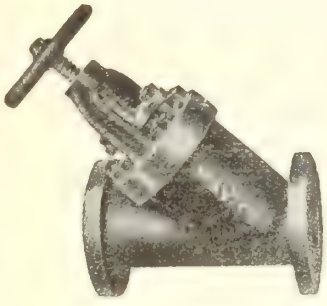
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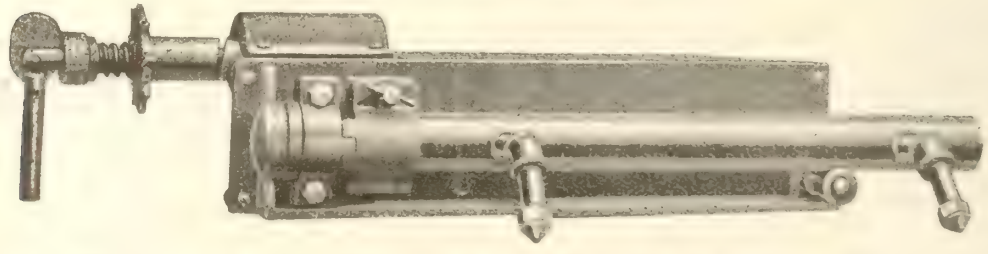
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:-: EDITORIAL :-:

The most important problem in Canada today is the very serious condition of the forest and the threatened curtailment of forest-born industries because of the extensive destruction of necessary raw material and decreased water power. We present in this issue, as editorials, the views of three keen thinkers on this great question.

* * *

ENORMOUS INCOME IS THREATENED

By Dr. CLIFTON D. HOWE, Acting President, Canadian Forestry Association

In the last analysis, adequate fire protection resolves itself down to the question of whether or not the people of this country wish to save their wood-using industries.

Let us look into the service of these to the country. The value of the manufactured pulp and paper products is $250,000,000 per annum. The various companies have invested in the business some $375,000,000. They employ 33,000 men in the mills and in the forest and they pay them each year $40,000,000 in wages. Isn't that business worth saving?

The value of lumber, lath and shingles produced in one year is $150,000,000. Lumber means boards and deals, dimension stock — not the finished product, as in the case of paper. I can't find just how much is added to this value by the various minor wood-using industries. With reservations, I will say that the minor industries which depend entirely upon wood, produce products to the value of $60,000,000 annually. They have an invested capital of over $50,000,000. They employ 13,000 people and pay annually in wages around $14,000,000. Is it not worth some effort to keep these industries going?

Are These Worth While?

To these should be added the industries that depend in essential part but not entirely, upon forest products. These, such as the horse-drawn and motor-drawn vehicles, produce each year products valued at $86,553,314. The capital invested totals over $65,000,000. The employes number over 9,000 to whom are paid wages amounting to nearly $12,000,000.

Going back to the lumber industry proper, we find that its invested capital reaches $250,000,000. It employs 55,000 men, and gives them $60,000,000 in wages annually. That business is worth saving too, is it not?

There are more than 100,000,000 people in Canada at work converting the forest product into wealth in some form or other. They are chiefly heads of families or the bread winners of families, thus they represent probably a half million people dependent upon the forest for a livelihood. Are they worth while in their work? Are they worth while to the country?

Must Invest in Protection

Let me emphasize that our great pulp and paper companies, the great lumber concerns will not exist many years longer unless there is more effective fire protection. In order to get more effective protection, the public must invest more money in it. When we consider the area actually under license or pulpwood concession, the amount expended on it as a whole, averages less than one per cent per acre per year. In other words we spend less than a cent an acre as an insurance rate on forest lands whose supplies at the present day yield us products to the value of $500,000,000 annually.

GOVERNMENT AROUSED AT LAST

By F. H. DEVENISH

When will Canada realize that she is annually losing millions of dollars owing to forest fires? Year after year, immense tracts of forest land are laid bare, imperilling the existence of one of our basic industries. There has been unending discussion of ways and means of perpetuating our forests, and although we are gradually improving protective measures, yet the broad fact remains that they are far from what they should be, with the result that the country is being devastated by fires such as those which occurred within the last week or two.

The Provincial and Federal Governments spend a large amount of time discussing comparatively trivial questions, and vote large sums of money for objects which, from a national point of view, are unimportant when compared with forest conservation. The destruction of forest wealth is a loss to the country as a unit, decreasing the source of employment, making capital unproductive, and reducing the amount of raw and finished products. The various companies also sustain very heavy losses, in that their supplies of raw material are seriously impaired.

In view of the ever-increasing losses, the time has surely arrived when the Federal and Provincial Governments should confer with the object of devising legislation which will minimise the enormous waste, largely preventable. No doubt the ministers of the various Governments appreciate the seriousness of the situation, but, unfortunately, the means employed are not adequate to cope with the fires. There is a lack of appreciation on the part of the public as to what this destruction means, and in that connection, the Hon. H. Mercier, the Minister of Lands and Forests of the Province of Quebec, has just issued an appeal to the

citizens of the province to aid the Government in preventing forest fires. The Minister points out what the forests mean in the life and progress of the Province, emphasizing that their destruction entails loss of employment to many thousands of people in Quebec, as well as the loss of great present and still more potential wealth.

The Governments will have to face the fact that more efficient fire-fighting means greater expenditure, but after all it is an outlay which will be more than justified if it results in the saving of our forests. It will, in fact, be small when compared with the loss which would otherwise occur.

The pulp and paper industry is interested in this question to a greater extent than any other branch of commerce, and although the companies spend very considerable sums on fire prevention, it looks as if they too, will have to make larger contributions in order to protect their limits. It is obvious that the present outlay is not sufficient adequately to protect the limits. The companies, in addition to losing enormous quantities of pulpwood, are incurring heavy depreciation to the limits through the destruction of potential sources of future supplies of the raw material. Having regard to this, the companies might bring pressure to bear on the Governments in order that more stringent laws be enacted, and that the Governments bear a portion of the necessary outlay to protect the forests. Our forests must be saved if the pulp and paper industry is to continue on the present basis.

A plainly-worded editorial in the *Quebec Chronicle* lays emphasis on the importance of taking greater precautions to prevent these fires. The article criticizes the Quebec Provincial Government for minimizing the seriousness of the situation, and declares that if the forests of the Province had to depend on the organization of the Provincial Government for protection they would be virtually at the mercy of the flames. This, we think, is an unfair statement in view of the fact that the Minister of Lands and Forests and Mr. G. Piché, Chief Forester, have over and over again pointed out the widespread nature of these outbreaks and what they mean to the Province. The writer is on safer ground when he calls attention to the non-enforcement of the law, rendered possible by the inadequate force appointment to guard the forests. He remarks that, "although a large appropriation may be necessary for the purpose, it will be no more than a drop in the bucket when compared with the almost incalculable losses in dollars and cents that is represented by hundreds of square miles of charred and barren stumps." Mr. Piché, in fact estimates that 100,000 acres of standing timber and pulpwood have been affected by the fires. As a further step of protection, the Provincial Government has decided to allow no more permits to settlers to burn slash this season until the dangerous period is over.

FOREST FIRE PERIL

By FRANK J. D. BARNJUM

Canadians have only Providence to thank for the fact that the outbreak of fires in Northern Ontario, Northern Quebec and in New Brunswick did not make a clean sweep of the forest growths in those districts. No human agency could have brought the relief which came with the providential downpour of rain. But the menace is still with us and will be until the authorities adopt much more drastic means for forest protection than they have yet done and until the public is educated to the point of regarding the forests as real wealth and treating them as such. As things are, fires are likely to recur at any time and to wipe out practically all of the timber our pulp and paper industry now depends upon for its existence, except, perhaps, the very limited amount of wood growing on the farm lots. We must not lose sight of the fact that notwithstanding the appalling losses that Canada has suffered from forest fires in the past, to-day we have the added menace of two hundred million cords of dead, dry budworm killed trees that are blowing down and piling up, forming an interminable mass of dry kindling tinder merely awaiting a period of drought and the dropping of a match or cigarette stub.

The heavy losses already sustained this season emphasize the necessity for using every available means for conserving our remaining supply of timber, and should cause the Government at Ottawa to stop temporizing with the question of stopping the exploitation of our unmanufactured wood for the benefit of foreign countries. No other country placed as Canada is would permit what amounts to the life blood of her industries to be cut down and shipped out of the country as we are doing. It is encouraging to note, from the discussions which have taken place in Parliament of late, that the members, regardless of party, are becoming alive to the situation and have expressed the view that there should be no further delay. It is sincerely to be hoped that the Government, before the session is over, will introduce a law which will give the desired relief and thereby postpone if not permanently avoid the crisis that is bound to overtake our wood-using industries if present practices are permitted to go unmolested.

Mr. J. L. McNichol, who is in charge of paper making experimental work for the Siamese Government writes that, on the anniversary of his departure from Toronto, he made the first cook of rag stock. On his arrival in Bangkok, the excavations had been started, but no one in the place knew a suction box from a press roll. He sends regards to friends in Canada.

That Technical Section meeting is surely going to be an affair that no member will want to miss.

Waste in the Generation and Use of Steam

By G. S. MARTINDALE

Works Engineer, Champion Coated Paper Company

(Paper Read Before Meeting of the Miami Valley Division of the Superintendents' Associaton, March 31, at Middletown, Ohio)

Waste in the generation and the use of steam is too generic a caption to fully cover in this discussion. I wish therefore to limit myself at the outset to those elements of waste which lie within the interests and jurisdiction of the Superintendent and Managing executive. A committee on the Federated American Engineering Societies ascribe waste in industry to the four primary causes:

First—Low production caused by faulty management of materials, plant, equipment and men.

Second—Interrupted production caused by idle men, idle materials, idle plant, idle equipment.

Third—Restricted production intentionally caused by owners, management and labor.

Fourth—Lost production caused by ill health, physical defects and industrial accidents.

Amoment's contemplation of the breadth of this subject merely as applied to the generation of steam suggests the reasons for the limitations necessarily made.

In considering the management of materials in the boiler room, coal is the prime factor. Many engineers advocate the purchase of coal upon scientific basis. This method like all other scientific methods cannot be too strongly recommended. However, the principle must be used understandingly and varied to meet all conditions. Generally speaking, coal of high B. T. U. value and low ash content should be purchased by those industries that are the greatest distance from the source of supply and those industries located nearest the source of supply can afford to use cheaper grades of coal, having smaller heat value. The mines should use the cheapest of all, the fundamental reason for this being freight costs. If costs just as much to transport coal ash as it does coal carbon.

An analysis of coal for heat value, ash, sulphur and volatiles is of great value, but it does not necessarily give a real measure of its heat value. There may exist combinations of sulphur and iron oxide which fuse into clinkers at furnace heat, resulting in much loss, due to incomplete combustion.

In the purchase of repair parts for boiler and plant equipment, it is advisable to analyze these items carefully. Whenever it is discovered that repeated orders for the same parts are made, a considerable saving can be effected by having patterns made for these parts and then purchasing castings from the foundry on a pound basis.

In considering buildings for housing boilers and prime movers, great care must be exercised in arranging and providing for the economical handling of materials at all points. It is also necessary to have complete accessibility and provide for the removal of repair parts such as boiler tubes, condenser tubes, etc. Proper ventilation is of prime importance. Working conditions for the men must be made as attractive as possible. Automatic equipment should be installed in proportion to the size and capacity of the plant.

With these preliminaries, I prefer to direct attention principally to the opportunities for eliminating waste in the operation of the boiler plant. Numerous surveys made by Government agents during the war, and by industrial engineers since, have emphasized the distressing amount of waste due to inefficient operation.

It is authoritatively asserted and proven in my own experience on several occasions that 20 per cent. of the fuel costs may be saved without spending an appreciable amount for additional equipment. This tremendous saving being accomplished through better boiler room operation. Some executives work under the impression that automatic stoker equipment does not require as much skill in its operation as the old hand fired methods. As a matter of fact, both hand firing and stoker firing is a highly skilled art and should be supervised by a man of special training. The old-fashioned idea of a man starting in as a fireman in the boiler room and working his way up into the engine room is being discarded to a greater extent each day. There are many opportunities for the combustion engineer in his own department. Possibly greater savings may be accomplished in this department than in any similar responsibility in an average plant organization.

Types of boilers and furnaces should be considered in a more technical discussion. However, it should be stated at this time that economizers pay under almost any condition if they are installed correctly, especially if we consider that they replace more than their own area of boiler surface. A rise of 11 degrees in feed water temperature before reaching the economizer or boiler will effect a saving of one per cent. of the fuel.

Effective soot blowers are almost indispensable for efficient operation. The writer has seen boiler ratings jump from 100 per cent. up to 150 per cent. for all conditions practically identical, with the exception of the installation and operation of soot blowers. Superheaters are advisable wherever power is generated. However, when steam is used directly for heating purposes, there is no economy in superheat. Superheated steam radiates energy less readily than saturated steam. A great economy can be effected in the purchase of superheat by installation of effective dry pipes so that the steam delivered to the superheaters will not contain moisture.

One of the greatest sources of waste in the boiler room is high stack temperatures. This of course indicates that heat is being lost up the chimney. Some of the causes of high stack temperature are due to maintaining too high a draft pressure over the fires,

that is, furnishing excess air. An efficient combustion may be maintained with a minus pressure over the fires from 2/100 to 4/100 of an in. Boiler ratings up to 300 p. c. are often maintained regularly with a draft not to exceed 4/100. Central stations endeavor to keep excess air within from 15 to 25 per cent. of the amount required for complete combustion. Anything under 35 per cent. in industrial practice may be considered good.

The question is frequently raised as to what constitutes good practice when referring to flue gas temperatures. One authority gives us the following figures based upon 150 tests:

For 175 per cent. of rating—
550 degrees or lower—Exceptionally good results.
550 degrees to 590 degrees—Very good results.
590 degrees to 650 degrees—Good results.
650 degrees to 715 degrees—Fair results.
715 degrees to 780 degrees—Very poor results.
Above 780 degrees—Exceptionally poor results.

Making a comparison or different ratings at good results, we find that—
100% rating is—480 degrees to 520 degrees.
150% rating is—555 degrees to 605 degrees.
175% rating is—590 degrees to 650 degrees.
200% rating is—630 degrees to 695 degrees.
250% rating is—700 degrees to 785 degrees.

Flue gas temperature is a very important question and these figures may be considered as a good guide to the superintendent. It is quite possible to effect a reduction of 400 degrees F. in many plants. This will save 16 per cent. of the fuel. For every 100 degrees F. rise in stack temperatures there is a loss of 4 per cent. in fuel.

Automatic draft control is a great aid to efficient firing. Some types now on the market will control the furnace draft on a minus pressure to within 2/100 of an inch and are so sensitive that when fire doors are open they will compensate for the excess draft. This equipment may be supplemented with automatic combustion control. Hand control, however, is often preferred when more than one boiler is being operated from one fan. The design and maintenance of baffles should be carefully supervised. Frequently gases bypass straight through boiler resulting in much loss. Air infiltration in the brick walls is another large source of heat loss.

Complete combustion should take place within the furnace. When combustion is not complete in the furnace, much heat passes up the chimney, having been generated too late to become effective through the boiler heating surfaces. Retarded combustion causes high CO and promotes the depositing of slag on the boiler tubes, causing further heat losses.

In an effort to confine combustion within furnace areas, boiler settings are now made much higher than was common in earlier practice. Two and one-half to three cu. ft. of furnace volume per rated boiler horse-power for stoker driven boilers operated up to 250 per cent. of rating is now considered good practice. Volumes of from 4 to 5 cu. ft. per rated boiler horsepower are used for powdered coal.

The difficulties of perfect combustion are largely increased by the fact that ready combustion in the furnace requires a temperature of about 3,000 degrees F. The best refractive materials for use in fire-brick will withstand a temperature of only 2,200 degrees F., thus creating a condition whereby it is advisable to keep cooling off the furnace walls or radiating heat in some way to prolong the life of the side walls. Many coals often fuse and form clinkers along the side walls at these temperatures and are a considerable source of expense in maintenance. We have found the use of exhaust steam on these walls a great benefit. Side wall tuyeres for the introduction of forced draft have been used with success and counteract this tendency.

Many losses in the operation of boilers are due to results of poor firing, such as holes in the fire, lack of judgment in the spreading and feeding of fuel and maintenance of proper thickness of fire bed and the rate of dumping ash.

The condition of feed water in boilers is of prime importance. The hardness, alkalinity and causticity of the water should be controlled within reasonable limits. Excessive amounts cause scale and deposits in the boiler and the flowing over of foreign material in the steam. Priming and foaming cause slugs of water to go over in the steam, resulting in much damage and loss. The presence of cylinder oil in the feed water is the largest factor in this condition. Adequate oil separators of proven design should be installed in exhaust lines adjacent to steam engines. As there is no oil in turbine exhaust this source of trouble is eliminated by their use. Should the oil separators not be fully effective, it is then necessary to pass the condensate through an improved type of oil filter before passing the condensate to the water softening plant or feed water heaters. Large losses in heat sometimes occur from excessive blow-downs made necessary from scale deposits and precipitates formed by foreign materials in the feed water.

An effective water softening plant therefore is of prime importance. This plant should be equipped to meet the peculiarities of the local water supply. Great savings can be effected by intelligent operation, whether the zeolite continuous or intermittent lime and soda ash process are used. Hardness should be maintained under 5 grains; alkalinity at 6½ grains —causticity at around 2 to 2½ grains. Good operation will reduce these amounts materially. It should be understood at this point that all figures given in this discussion are average and may be the subject of much debate among experts.

Automatic feed water regulators are a great aid to effective efficient boiler operation. Aside from their safety features their operation results in the conserving of boiler capacity and the meeting of fluctuating load demands with greater ease and economy of fuel.

Waste in the distribution of steam may be located by examining exhaust spouts in various parts of the plant to determine the necessity for the amount of steam which may be found escaping. It will frequently be discovered that this escaping steam may be recovered and returned as condensate to the boilers. Flow meters installed on all main steam lines will afford a means of checking this loss and properly proportioning departmental costs. Much loss on steam distribution is caused because of bare pipes. All steam pipes should be insulated with the proper pipe covering, except at points where the radiated heat is desired.

Even skilled and properly trained men cannot locate all sources of waste, should intermittent observation and intuition be their only means for acquiring knowledge of their plants. It is absolutely essential in modern boiler room practice to properly equip boiler rooms with modern measuring instruments.

Flue gas analysis forms an important source of control, there being many efficient CO_2 recorders on the market.

There is a great deal of wasted heat going up the stack in the form of CO when it should have combined with additional oxygen to form CO_2. Proper air control will enable the operator to maintain an average of from 12 to 16 per cent. CO_2 when coal is used for fuel which indicates a very acceptable rate of combustion.

Boiler room instruments are vitally connected with boiler room waste. Waste means inefficiency. In order to control inefficiency, we should find means for measuring efficiency. Efficiency in its last analysis is a ratio indication of input against output. By measuring total input and total output, then properly synchronizing these records, a means may be formed by comparison for analyzing all sources of waste. Records are of value only in our ability to compare one record with another to note improvements or deteriorations. The means for acquiring a continuous record of total input and output then are of vital interest.

We have our automatic coal weighers, water weighers and meters, also steam flow meters. The difficulty lies in the fact that all these records in themselves mean but little. They should be compiled into a complete single record of total input and total output and a continuous efficiency ratio, that is pounds of steam produced per pound of coal burned. Studies of these records comparing one with another can then be made to show up all causes of inefficiency. The method of observation and studying would be to maintain all conditions between a given input and output the same with the exception of one and note the variation in results from the variation of the one cause. In this way, by a process of elimination all causes of waste may be located.

It is my judgment that automatic means for obtaining constant record of total input, total output and efficiency ratio will be demanded by the managers of industry when they realize the uses to which such records may be put. In fact, I know that such instruments are available awaiting this demand. The fundamental elements of this consideration have already made themselves felt in increased demand for measuring devices of all kinds, particularly of intergrating flow meters, which form one of the most available means for compiling this data. To this end integrators have been developed which make readings of quantity amounts of steam, oil, air, gas and water as easy to obtain as the kilowat measurements for electricity. Because of better means of measurement electricity has had other sources of power at a disadvantage for some time.

In addition to the main forest nursery at St. Williams, Norfolk county, three additional nurseries are being developed by the Ontario forest service. These are situated at "The Sandbanks" in Prince Edward county, at Orono, in Durham county, and at Midhurst, Simcoe county.

NOVA SCOTIA COAL FOR QUEBEC PROVINCE

The possibility of using the coal measures of Nova Scotia much more largely than at present to supply the needs of Quebec, and possibly part of Ontario, is engaging a good deal of popular attention just now. The reported acquisition of coal areas and the express intention of the Department of Mines at Halifix to investigate thoroughly the maximum productive capacity of the province's coal measures, lends added interest to the question. In this connection it is interesting to note the information given by Mr. F. W. Gray of the British Empire Steel Corporation before the Senate Committee on Fuel Supply in Ottawa recently.

In reply to the question as to how much coal Nova Scotia could supply for Canada's need and whether coke could take the place of anthracite Mr. Gray said, "I think there would be no difficulty at all in Nova Scotia supplying all the coal that Quebec at least, and probably Ontario, would need in the way of coke as an equivalent for anthracite. I might say I have used Sydney coke all winter at Ste. Anne's. I would rather have it—much rather— than anthracite. It is less trouble; it is less expense." Mr. Gray stated further that the coke had about the same heating value, and that he would be willing to pay more for a ton of coke than for a ton of anthracite.

In referring to the possibility of the British Empire Steel Corporation establishing by-product coke ovens in Montreal, Mr. Gray stated that the investment involved would run from three to five million dollars for a sixty-oven plant with a capacity of 1000 tons of coke a day. "Of course, the old line gas plant has been entirely superseded by the by-product coke oven. You can make better gas and more of it, and get a greater recovery of by-products from the modern by-product oven than from the old-fashioned retort gas works. They are out of date. I might say, too, that there is no comparison between gas-house coke and by-product coke. In the gass works your object is the destructive distillation of coal to obtain gas; in by-product coke your object is to get a high-carbon fuel. The coke oven has, I think, entirely superseded the gas plant where coal alone is used. Water gas is a little different."

Cape Breton coal, Mr. Gray stated, would give a 64 per cent yield of coke, two or three gallons of benzol, ammonium sulphate in unusually large quantity, and tar of peculiar value. Nova Scotia coal is known to be particularly rich in by-products. It is high in sulphur, too, but this is not an insuperable objection as it can be removed economically.

The great improvement in by-product oven practice during recent years was well illustrated in the evidence. It requires no more than 100 men to run modern ovens producing 1000 tons of coke a day, which is about one-quarter the number required with older types.

One of the most important effects of the use of Nova Scotia coal for domestic fuel, via the coke oven, would be the steadying effect it would have in the mines, Mr. Gray explained. To supply the Island of Montreal would require a million tons a year. With this to depend upon each year, the coal operators would have what they have always lacked heretofore—a dependable market. The railway contracts for coal from Nova Scotia are never certain; they are awarded to American mines if they can undercut our own mines in price, and the operators in Nova Scotia must meet these prices or lose the railway custom.

Program For Technical Section Meeting

THURSDAY, JUNE 21—

10 A. M. — Members will assemble at the Ritz-Carlton Hotel on Sherbrooke Street West, where motor busses will be provided for a trip to Ste. Anne de Bellevue.

11 A. M. —Arrival at Ste. Anne's. Inspection of Macdonald College grounds and of Garden City Press, (Home of the Pulp and Paper Magazine) and of the Institute of Domestic and Industrial Arts, under whose direction the Correspondence School in Paper-Making is carried on).

FRIDAY, JUNE 22—

10 A. M. — Members will assemble at the Ritz-Carlton Hotel, where motor busses will be provided to convey them to Lachine, where a visit of inspection will be paid to the Dominion Engineering Works, Ltd. This Company is now constructing a 230-inch newsprint machine for the Belgo Canadian Paper Company, Limited, and a 234-inch newsprint machine for the Backus-Brooks Co.'s new mill at Kenora, Ont., and have other important paper-making and hydraulic machinery in progress.



A ROW OF NINE GARDEN CITY HOMES, GARDEN CITY AVENUE, GARDENVALE.

12.30 P. M. — Luncheon at the Senneville Country Club as the guests of the Pulp and Paper Magazine. After luncheon there will be one hour devoted to solid business The *piece de resistance* will be an address by Mr. J. O. Ross of the J. O. Ross Engineering Corporation of New York and Montreal on the Briner System for the elimination of moisture from machine rooms, which is creating so much interest in the industry at present.

2.30 P. M. — Trip by launch to Beauharnois, Que., where a visit of inspection will be paid to the Howard Smith Paper Mills Limited mill at that point, as guests of the company.

5 P. M. — Trip by launch back to Ste. Anne de Bellevue where train will be taken for Montreal.

8 P. M. — Dinner at the Ritz-Carlton, Montreal, as the guests of the Canadian Pulp and Paper Association.

This visit will provide the first opportunity our members have been afforded of seeing paper machines in the process of manufacture and will undoubtedly prove both interesting and instructive.

Friday afternoon will be left free. There are many sight-seeing opportunities and other pleasurable ways of spending a summer afternoon in Montreal and its environs, details of which will be made available to visitors on arrival. Golf sticks are in order.

If you have not already advised the Secretary of your intention to attend please do so at once. A postal card only is necessary.

Hotel reservations will be made upon request.

Edward Beck, Secretary.
701 Drummond Building, Montreal.



SENNEVILLE ROAD — NEAR THE SENNEVILLE COUNTRY CLUB



ONE OF THE RESIDENCE BUILDINGS — MACDONALD COLLEGE

Pulp and Paper Exports From Scandinavia In 1920-1922

By A. E. CADMAN, Canadian Pulp & Paper Association

Some figures on the exports of Pulp and Newsprint from Canada and from Norway, Sweden and Finland.

The year 1922 witnessed a great increase in activity in the pulp and paper industry of Canada and the United States, after the depressed conditions in 1921. A similar increase took place in Norway, Sweden and Finland, the other great pulp and paper producing countries. These countries had been affected by the period of depression more than the countries on this side of the Atlantic and the keen competition they were able to offer in the world markets, particularly in pulp, prevented Canada from taking full advantage of the improved demand.

From a study of the trade returns of Norway, Sweden and Finland and other sources of information we find that the exports of various grades of pulp and paper from these countries was much greater in 1922 than in 1921 and in many cases greater than in 1920. As the pulp and paper industry in these countries relies to a very large extent upon the demand in various overseas markets, the export tonnage gives the best means of estimating the situation and the future possibilities. In this respect their situation is very similar to that of Canada with the difference that our principal market is the United States while the Scandinavian* countries have a market that is practically world-wide.

MECHANICAL PULP — EXPORTS

Dealing first with the exports of mechanical pulp from these countries we have the following figures for the past three years: (in short tons, dry weight.)

Year	Finland	Norway	Sweden	Total
1922	56,769	224,007	167,315	448,091
1921	55,498	162,545	65,662	283,705
1920	90,309	217,987	181,675	489,971

The total exports of ground-wood from these countries were some 40,000 tons less in 1922 than in 1920. Norway was the only country to show an increase over the total for that year. The decline in Finnish and Swedish exports was mainly due to an increased domestic consumption caused by the increased production of paper.

By way of comparison with the Scandinavian figures we have the Canadian exports for the last three years which were as follows:

1922	310,415 tons
1921	223,494 "
1920	304,344 "

We have thus a total export form Canada in these three years of 838,253 tons compared with a total for the three Scandinavian countries of 1,221,767 tons.

The most important consumers of this ground-wood are the United States and the United Kingdom, while France is the principal consumer on the European continent. While we have no official records of the destination of these exports except in the case of Canada we have records showing the imports into the United States and the United Kingdom which give us a good idea of where these exports went. These are shown in the following tables in short tons dry weight.

U. S. A. IMPORTS:

From:	Finland	Norway	Sweden	Total N. S. & F.	Canada
1922	4,975	9,227	6,366	20,568	190,080
1921	13,025	23,381	17,234	53,640	136,242
1920	12,815	11,384	7,074	31,273	197,995

UNITED KINGDOM IMPORTS:

From:	Finland	Norway	Sweden	Total N. & S.	Canada
1922	x	150,483	65,289	215,773	81,008
1921	x	85,251	14,425	99,676	72,608
1920	x	170,982	47,139	218,121	49,266

x Not specified in Trade Returns.

Thus, out of a total of 2,060,020 tons exported from these four countries in the past three years, the United States accounted for 629,798 tons or 31 per cent, and the United Kingdom for 736,661 tons or 36 per cent. In other words, these two countries took over two thirds of the amount exported: (the United Kingdom's total would be increased by the addition of imports from Finland which are not separately classified).

SULPHITE PULP EXPORTS:

In the case of sulphite exports, figures are available, for all countries except Finland, under the two headings "bleached" and "unbleached". The Finnish returns classify "sulphite" only, as did those for Norway previous to 1922.

The following table shows these exports for 1920 - 1922

	Finland	Norway	Sweden		Total
	Blchd.	Unblchd.	Blchd.	Unblchd.	Sulphite (Tons)
1922	137,817	128,792	70,970	73,322	684,201 1,095,102
1921	96,337	90,515	17,806	332,109	536,767
1920	66,227	233,053	48,667	586,513	934,460

Canada's exports of sulphite for these years were:

	Bleached	Unbleached	Total Tons
1922	151,048	208,445	359,493
1921	76,801	127,389	204,190
1920	100,640	281,854	382,494

The total exports of sulphite from the Scandinavian countries in 1922 was 1,095,112 tons and from Canada 359,483 tons or about one-third of that quantity. In 1921 the Scandinavian total amounted to 536,767 tons, less than one-half of 1922 exports, and the Canadian total was 204,190 tons compared with 359,493 tons in 1922.

For the three years, the total sulphite exports from Norway, Sweden and Finland amounted to 2,566,329 tons and in the same period Canadian exports amounted to 846,177 tons or almost one third of the Scandinavian total.

Details of the countries of destination of these exports are not available in very complete form, but we have a record of imports into the United States which is the market about which we are principally concerned. These are shown in the following table:

BLEACHED SULPHITE:

From:	Finland	Norway	Sweden	Total N. S. & F.	Canada
1922	6,489	43,852	46,052	96,393	136,115
1921	10,114	9,163	6,462	25,739	66,244
1920	5,969	16,650	6,656	29,275	96,253

UNBLEACHED SULPHITE:

From:	Finland	Norway	Sweden	Total N. S. & F.	Canada
1922	30,960	32,630	221,797	285,387	164,292
1921	25,148	3,513	81,836	110,497	98,687
1920	15,123	4,061	82,690	101,874	243,542

Figures for the United Kingdom are not complete, as Trade Returns do not specify sulphite imports, all chemical pulp being classified under "chemical wet" and "chemical dry". As the greater part of these imports, however, consists of sulphite pulp, we give figures for the totals. These are as follows:

* Norway, Sweden and Finland are referred to in this article as the Scandinavian countries, although the term Scandinavian does not, properly speaking, include Finland.

From	Norway	Sweden	Finland	Other Countries
1922	59,112	191,295	48,743	61,014
1921	40,478	139,173	11,672	26,978
1920	107,947	343,425	x	104,087

x Finland included in Other Countries in 1920.

Canadian exports of sulphite pulp to the United Kingdom were:

1922	43,183 tons
1921	15,793 "
1920	51,983 "

SULPHATE PULP EXPORTS.

The exports of sulphate pulp from the various countries were as follows:

	Finland	Norway	Sweden	Total N. S. & F.	Canada
1922	64,891	18,330	228,621	305,842	148,335
1921	39,091	5,000x	113,176	157,267	99,539
1920	30,658	10,000x	154,882	195,540	133,146

x Not classified separately but figures estimated.

In 1922 it will be seen that Canada's exports of sulphate pulp were practically equal to one half of the amount exported by the Scandinavian countries.

The imports of sulphate pulp into the United States for the last three years were as follows:

	Finland	Norway	Sweden	Total N. S. & F.	Canada
1922	26,018	9,856	135,874	171,748	154,038
1921	8,066	3,866	64,626	76,558	100,551
1920	8,693	9,837	48,306	66,836	131,925

NEWSPRINT:

The three countries of Norway, Sweden and Finland produce about 420,000 tons of newsprint annually and of this amount the larger part is exported, the domestic consumption being less than fifteen per cent of the total tonnage produced. In 1922 the total exports of newsprint from these countries were 406,211 tons, as follows: Norway 117,728 tons, Sweden 145,132 tons and Finland 143,351 tons. It may be well here to emphasize the share of Finland in this total. That country's export last year was practically equal to the amount exported by Sweden. In 1913 Finland exported only 77,213 tons of "printing paper" (which included newsprint) and in 1920 the total was 99,259 tons. Thus Finland has made considerable progress in this direction and of the three countries mentioned is the one that offers the greatest possibilities for future development.

For the past three years the newsprint exports from these countries were as follows:

	Finland	Norway	Sweden	Total Tons
1922	143,351	117,728	145,132	406,211
1921	103,474	50,418	122,904	276,796
1920	99,259	84,893	128,634	312,786

Countries of destination are not given in the Trade Returns of the Scandinavian countries but the Customs Returns of the United States show the following quantities imported from these countries in the past three years together with the imports from Canada.

	Finland	Norway	Sweden	Total N. S. & F.	Canada
1922	26,205	17,292	51,812	95,309	896,312
1921	22,664	20,194	48,931	91,789	656,204
1920	3,244	5,195	18,875	27,314	678,732

In addition to figures for the United States we have the records for the United Kingdom for these years which show the imports from these countries.

	Finland	Norway	Sweden	Total N. S. & F.	Canada
1922	44,017	31,506	28,880	104,403	10,523
1921	38,326	9,495	29,327	77,148	267
1920	29,239	21,114	24,179	74,532	8,170

Other countries which imported considerable quantities of newsprint from Finland, Norway and Sweden of which we have records are Australia and France.

The imports into Australia were as follows:

From:	Finland	Norway	Sweden	Total N. S. & F.	Canada
1922	128	11,474	8,648	20,250	34,112
1921	937	10,009	19,037	29,983	25,188
1920	16	9,565	17,565	27,146	36,805

Those for France were:

From:	Finland	Norway	Sweden	Total N. S. & F.
1922	15,774	28,943	15,971	60,688
1921	5,849	8,492	3,837	18,178
1920	3,534	24,352	26,810	54,796

Thus out of total exports from the three Scandinavian countries of 406,211 tons in 1922; the United States, the United Kingdom, Australia and France together accounted for 280,650 tons or practically 70 per cent. Outside of those countries the principal markets for Scandinavian newsprint were Argentine, Brazil and the various South American countries. Detailed returns are not available from these countries but the Scandinavian exports to Latin America in 1922 were in round numbers, Finland 22,000 tons, Norway 16,000 tons and Sweden 21,000. The remaining tonnage exported by these countries was divided between countries in Europe, India, China and South Africa.

WAYAGAMACK SOCIAL SERVICE WORK

This progressive firm has left no stone unturned to make life enjoyable around its plant. Situated as the plant is, on Wayagamack Island, with the mill at one end, and the small artistic houses, set amongst the tall pines, at the other extremity, conditions are ideal. The cottages surrounded by their beautiful flower beds and well kept lawns, provide a picturesque setting indeed for the tennis courts and bowling green.

Year by year this company has increased its social service work, until at the present time a swimming club, tennis club, bowling green, shooting gallery, football team and the latest organization a glee club are all active . During the winter a two rink curling club is operated. In conjunction with the latter is the fine Wayagamack Curling Club House, with both piano and victrola, which forms a fine recreation room and is also the headquarters of the glee club.

The company is also adding to the natural beauty of the place. This year on both sides of the road leading to the island, trees have been planted every twenty feet, so that within a few years one of the finest driveways along a water's edge, leading to a manufacturing industry, will be the entrance to the Wayagamack Pulp & Paper Plant.

Concern is felt by some of the mills in the St. Maurice Valley, at the rapid fall in the water level due to lack of any heavy rains. This is hindering the logs reaching the St. Maurice River; jam after jam is being reported on the small tributaries, while the banks are strewn with logs.

What The Paper Mill Apprentice Did In 1823

The following is the text of the indenture of apprenticeship which was used in Scotland 100 years ago. It is taken from an exceedingly interesting historical account of papermaking in Berwickshire, which is a story of the mills of Young Trotter and Son. The period covered is from 1786 to 1923. In 1842 this firm installed its first Fourdrinier machine, made by Bertrams. The historical sketch refers particularly to the opening of the Chirnside Bridge Paper Mill, where our good friend Mr. James Home, President of the Beveridge Paper Co., Montreal worked as a paper maker, and where he obtained much of his extensive knowledge of the industry that serves him in such good stead today. The terms of the apprenticeship contract would seem hard and stringent to many of our readers, but there seems no doubt from the results that the ancient system possessed many advantages. For one thing, there was a greater sense of responsibility and pride on the part of the employee, and there was a greater personal contact and interest on the part of the employer.

A committee of the Technical Section is at work on the subject of apprenticeship in Canada's pulp and paper mills and the Pulp and Paper Magazine urges that every Management give the committee the fullest possible support in working out this very important problem of raising the qualifications of the paper mill worker.

* * *

It is CONTRACTED AGREED and ENDED between Messrs Young Trotter and George Cranstoun Trotter carrying on business under the firm of Young Trotter and Son, Paper Manufacturers at Broomhouse Paper Mill in the County of Berwick **on the one part** and.....oldest lawful son of..... Mill Wright at the said Mill, with the advice and consent of the said....., and the said..... for himself and as Cautioner, and otherwise bound in manner following, THAT IS TO SAY the said..... with advice and consent foresaid hereby BINDS himself apprentice to the said Young Trotter and Son their heirs and assignees in their art and employment of paper making and that for the space of Seven Years from and after the second day of May Eighteen hundred and twenty-three years which is hereby declared to be the commencement of these Indentures notwithstanding the date hereof, during which space the said.....BINDS and OBLIGES himself to serve his said Masters by night and by day and to obey all their lawful commands keep all their secrets and do not act prejudicial to their interest but on the contrary to prevent the same to the utmost of his power. And he also BINDS and OBLIGES himself that he shall not injure embezzle waste destroy or dispose of any of his Masters' money goods or otherwise, and if he does on the contrary he shall pay or cause to be paid to his said Masters double the value of the goods or effects so injured embezzled or destroyed, and that he shall not frequent any Taverns or Alehouses nor play at cards, dice or any other such games nor keep idle or disorderly company or in general be guilty of any vice or immorality by which these presents may be infringed or broken and he farther BINDS and OBLIGES himself not to buy or sell any wares or goods during the space of these Indentures that may in any ways interfere with his Masters' business, and that he shall not absent himself from his said service without leave obtained from his said Masters, and that if he fails in punctual attendance he shall serve two days after the expiration of the terms herein specified (in same hours as the journeymen do—and also to attend each day's absence during that time. FURTHER he BINDS and OBLIGES himself when employed at dry work to work from six in the morning till eight at night, and when employed at the Vat to work the same hours as the journeymen do—and also to attend the engines at all times when desired—and lastly it is hereby declared that in case the said.....shall at any time desert or leave his said service and apprenticeship it shall be in the power of his said Masters to retain out of the money payable to him after specified the expenses incurred by them in recovering and bringing back the said.....to the work as the said expense shall be ascertained by an Account signed by the said Young Trotter and Son. For WHICH CAUSES and on the other part the said Young Trotter and Son BIND and OBLIGE themselves and their foresaids faithfully to teach and instruct the said.....in their foresaid trade and shall do their utmost diligence to cause the said apprentice learn the same, in so far as he is capable, and the said Young Trotter and Son BIND and OBLIGE themselves to pay to the said apprentice for the first four years the sum of four pence sterling for every felt washing in lieu of the usual sum allowed to apprentices for the purchase of Clothes, but he shall have no assistance in washing the felts—And for the remaining three years he shall be allowed at the rate of the sum of Forty Shillings sterling per annum for the purchase of his Clothes provided his conduct during such employment shall meet the complete approbation of his Masters—AND MOREOVER the said Young Trotter and Son BIND and OBLIGE themselves to pay to the said apprentice over and above the said allowance the following sums viz: When he is Fourteen and under Fifteen years of age, the sum of Four Shillings and Six pence sterling per week; When he is Fifteen and under Seventeen years of age the sum of Five Shillings and Six pence sterling per week; When he is Seventeen and under Nineteen years of age the sum of Six Shillings and Six pence sterling per week; When he is Nineteen and under Twenty and under Twenty-one years of age the sum of Eight Shillings Sterling per week; And in addition to the above sums he shall be allowed when employed at Couching the sum of one shilling sterling per week and when making the sum of one shilling and six pence per week, as extra allowance; And it is hereby declared that in case the said.....shall in

the opinion of his Masters be guilty of any misbehaviour, misdemeanour or disobedience it shall be in their power to dismiss him from the service without being liable for any damage or prosecution on that Account; And the said.....as Cautioner for the said.....BINDS and OBLIGES himself to pay to the said Young Trotter and Son the sum of Fifteen Pounds sterling in case the said apprentice contravenes or acts contrary to the duties incumbent on him to be performed to his said Masters during the existence of these presents, And both parties BIND and OBLIGE themselves and their foresaids to implement and perform their respective parts of the penalty of Thirty Pounds sterling to be paid by the party failing to the party observing the Indenture or willing to do so besides performance — Ad both parties consent to the registration hereof in the Books of Council and Session or others competent therein to remain for preservation; and if necessary that letters of Horning on Six days charge and all other legal execution may pass upon a decree to be interponed hereto in form as effeirs and to that effect they CONSTITUTE their procurators, etc. IN WITNESS WHEREOF these presents written upon this and the two preceding pages of Stamped paper by.....to Thomas Trotter Junior Writer to the Signet are subscribed by the said parties at Broomhouse Paper Mill the fifteenth day of April Eighteen hundred and twenty-five years before these Witnesses.....overseer to the said Young Trotter and Son and.....House Servant to the said Young Trotter.

(Signed).....Witness
(Signed).....Witness
(Signed).....Witness
(Signed).....Witness

(Signed) YOUNG TROTTER
(Signed) Geo. C. TROTTER.
(Signed) .....
(Signed) .....

BROOMHOUSE MILL.
First day of May 1830.

We hereby discharge this Indenture, the premises having been fulfilled by the parties to each other and we hereby subscribe our names as full discharge.

(Signed) YOUNG TROTTER
(Signed) Geo. C. TROTTER.

TREATMENT OF STRAW

A British patent has been granted to Mr. C. Weygang covering a process for treating fibrous materials. In preparing straw, particularly wheat and oat straw for paper-making and like purposes, the straw is cut up and soaked for 12 to 24 hours or boiled under low pressure for three to six hours in a mixture composed of eight parts of slaked lime mixed to a thin paste with water, one to four parts of petroleum or other refined or crude mineral oil, and four to eight parts of sodium carbonate or sulphate previously dissolved in water. Where soaking is used, the straw is piled in heaps, the excess liquor being drained off and used for a fresh lot of straw. After treatment, the material is rinsed and converted into paper in the usual way. The rinsings are used for treating straw to produce coarse paper or boards.

Fidelity to principle is the highest expediency.

NEWSPRINT PRODUCTION IN APRIL

By A. E. CADMAN, Canada Pulp & Paper Association

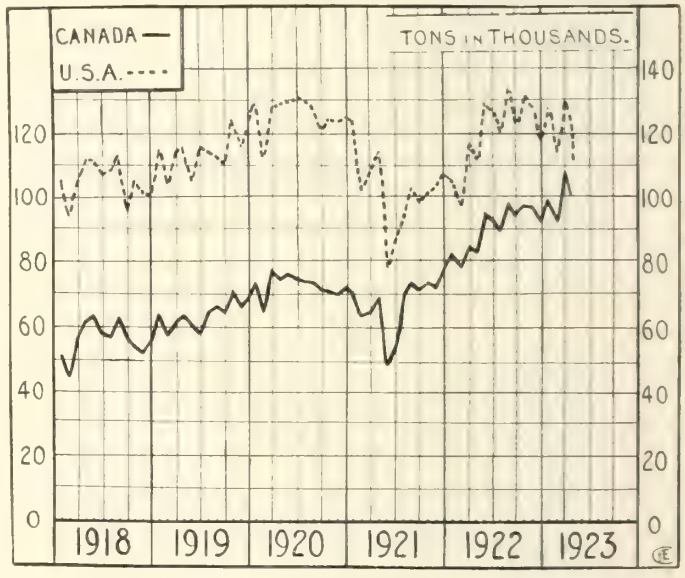
Production of newsprint in April was below the March production in both Canada and the U.S.A. due to the shorter working month; in both countries the actual daily production was greater than in the previous month.

Canadian mills produced 100,742 tons in April compared with 83,731 tons in April 1922. The proportion of the U.S. mills was 116,719 tons compared with 111,861 tons in April 1922. Total production was thus ahead of last year by 21,879 tons or 11 per cent.

During the first four months of this year production in Canada and the United States increased considerably over the first four months of 1922 and 1921, the increase in Canada being much greater than in the U.S.

The figures are:

		Canada	U.S.A.	Total Tons
Four months	1923	398,835	488,076	886,911
	1922	329,416	432,962	762,378
	1921	269,965	449,810	719,775



Canada's production in this period was greater than in 1922 by 69,419 tons or 21 per cent and greater than in 1921 by 128,870 tons or practically 48 per cent.

The average daily production of Canadian mills in April was 4.030 tons while the average daily tonnage produced by U.S. mills was 4,396 tons. For the first months of this year Canadian mills have arranged 3,910 tons daily against a daily average of 3,262 tons produced in the first four months of 1922.

KRAFT PAPER FOR PRINTING

The Pulp and Paper Magazine is just in receipt of a folder received from the Wayagamack Pulp and Paper Company illustrating the excellent effects that can be produced on a smooth finish kraft paper with carefully handled printer's ink. The sample shows the printing of a half-tone from a photograph of a woman reading a magazine. It appears to be about a 100 screen, and certainly makes a very attractive cover. It is interesting to note the strides that are being made in the application of kraft paper, as a printing paper, for covers and other purposes.

A CANADIAN'S IMPRESSION OF AUSTRALIAN TRADE

As we stated in our last issue, Mr. W. Gorman, representative in Montreal of the Provincial Paper Mills, Ltd. has returned to Canada after several months' visit to Australia and New Zealand, in the interests of his company. Below, we supplement the information which we gave last week, these particulars being given to a representative of the Pulp and Paper Magazine in an interview with Mr. Gorman. The views of Mr. Gorman will be found of timely interest having regard to the fact that Canadian paper makers are making strenuous efforts to cultivate export business in Australasia. The Canadian firms have not been content with appointing agents, but have sent out special representatives in order to study local conditions. Some time ago we gave the impressions of Mr. C. Howard Smith, president of the Howard Smith Paper Mills, Ltd., of his visit to Australia and New Zealand. Those impressions are corroborated by Mr. Gorman.

Mr. Gorman left Canada on the 24th of November in the S. S. "Niagara," and landed in Sydney on December 20th. From there he visited the principal cities of Australia and New Zealand. Speaking on general conditions, he stated that trade was quiet in both countries, due to the fact that there are still large stocks bought at high prices during the the war period, and also to the uncertainty of world-wide affairs. Labor conditions in Australia and New Zealand were unsettled, the labor element exercising a very wide influence in both countries. Mr. Gorman found a very strong sentiment for the Mother Country prevailing. A number of representatives of British houses were making capital out of this sentiment, in order to boost their trade, using the argument that Canada was financed by American capital, and was little better than a foreign country.

In that connection, the following letter sent to the Prime Minister of the Commonwealth of Australia by the secretary of the Paper Makers' Association of Great Britain and Ireland, is of interest: "At the last meeting of the newsprint section of this association it was unanimously resolved that the best thanks of the association should be transmitted to yourself for the benefits conferred upon the paper-making industry in the United Kingdom re the application of a preferential tariff to British newsprint. It was felt by the whole of the members present that this preferential tariff, by facilitating the supply of British paper to the Australian market, thereby giving employment to workers at home rather than encouraging the industry of foreign countries, contributes greatly to bringing together the British Empire in bonds of unity and friendship." This idea, however, had been offset by recent speeches of members of the Government who had declared that Canada was to be regarded as part of the British Empire. Mr. Gorman found Australians prepared to buy Canadian products, other things being equal. With regard to the paper trade, the people of Australia and New Zealand were great readers, and consumed a large amount of paper per capita. At present it was almost impossible to sell newsprint in Australia, owing to the fact that Canada, for tariff purposes, is regarded as a foreign country. Newsprint and book-papers were subject to a duty of £3, whereas British productions of this class were admitted duty free. On writings, bonds, and other higher grades, Great Britain had also a preference, paying 5 per cent ad valorem, and Canada 15 per cent ad valorem. This difference of 10 per cent made it very difficult for the Canadian paper mills to compete with the British mills, who bought their pulp from European countries, thus indirectly benefiting really foreign countries. Mr. Gorman went on to point out that the view of the Canadian mills was that this condition was unfair, and that Canada should be placed on the same basis as the Mother Country, in view of the fact that Canada *is* part of the British Empire. In Mr. Gorman's opinion the only hope for a big development of Canadian paper in Australia is in this country being placed on the same basis as the United Kingdom.

With regard to the manufacture of paper in Australia, it was significant that the only mill manufacturing white paper had been dismantled. Australian mills made cheap kraft, chip and straw board. There was, therefore, no reason for the protection of Australian-made paper, the tariff being really a matter of revenue.

A large number of tests had been made of the pulping qualities of indigenous woods by the Forest Products Laboratory, Perth, W. A. It had been found that it was not an economical proposition to import the raw material for making pulp and paper. The following gives the result of the tests:

1. Four species of Eucalyptus, viz., Blackbutt, Coast Ash, Mountain Gum, and Spotted Gum, were submitted by the New South Wales Forestry Commission for examination in respect to their pulping and paper-making properties.

2. Autoclave pulping tests indicate that all four may be converted into good pulp, but that Blackbutt and Coast Ash are apparently the most suitable.

3. Though somewhat harder to cook than the others, Blackbutt is capable of giving a high yield and a larger digester output. The latter may amount to 75 per cent. more pulp per digester than for the commonest foreign pulp-woods.

4. Cooked under suitable conditions all the woods give pulps which are not hard to bleach, from 12 per cent to 18 per cent standard bleach being required for yields ranging from 44 per cent to 47 per cent bone-dry unbleached pulp. Loss on bleaching such pulp amounts to about 2 per cent to 3 per cent of the bone-dry unbleached pulp.

5. The idea that strong paper can not be made from Eucalyptus pulps is a mistaken one. Paper-making tests show that good quality strong paper may be made from suitably-cooked and properly-beaten pulp from any of the four woods.

6. Blackbutt seems to give a tougher fibre than the others, and with a suitable beater treatment, exceptionally strong light-weight paper may be made from it.

7. The uses to which the well-prepared bleached pulps might be put are the manufacture of writing, envelopes, typing book, magazine, and similar higher-grade printings.

8. In view of the fact that surprisingly strong paper has been made from Blackbutt and Eucalyptus pulps on a laboratory scale, it is recommended that semi-commercial scale tests be made to produce pulp in ton lots for conversion into paper on full-sized paper-machines.

The approximate cost of production and actual paper making value would be determined thereby and the prospects of commercially pulping Blackbutt at a profit could thus be ascertained.

Mr. Gorman had a good word for the Canadian Merchant Marine. He stated that Mr. Ramsay and Mr. Johnson, of the departments of the Canadian Merchant Marine and the Canadian National Railways were very active in

promoting Canadian trade in Australia. They were up against very serious competition in the matter of transportation, but did their very best to overcome the difficulties. The Canadian Government Merchant Marine looked after shipments in a very satisfactory way, and Mr. Gorman found that Canadian paper arrived in Australia in excellent condition.

With regard to the paper trade in New Zealand, Canada was on the same basis as the Mother Country. Mr. Gorman believed that "the prospects for the development of our trade are very good, and, in fact, are proportionately greater than in Australia, owing to the fact that Canada is not under the same handicap in regard to tariff. New Zealand does not manufacture any white papers."

WILLIAM I. BISHOP, LTD., A BUSY FIRM

William I. Bishop, Limited, Construction Engineers Montreal, advise regarding considerable development and activity in the way of new work.

From the propositions with which they are associated might be mentioned the following.

William I. Bishop Limited are designing engineers on the hydro-electric end of the Anglo-Newfoundland Development Co., on the Humber River, Newfoundland, for Armstrong-Whitworth Limited. On this same development, they have a contract for 2,000 odd Raymond piles.

About 1,500 Raymond piles for foundation to Elevator "B", Harbour Commissions of Montreal; also piling excavation and footings for the conveyor apparatus for same.

Raymond Concrete Pile contract for foundations to Drummond-McCall's new Office building and warehouse on Wellington and Dalhousie Streets.

Raymond Concrete Pile contract for foundations to additions to Plateau Exchange for the Bell Telephone Company.

Consulting Engineers on the Quebec Development proposition at Lake St. John. They have also done considerable actual construction work in connection with this project.

They are now finishing up 13,000 H. P. hydro-electric power development for Price Brothers at Chicoutimi.

EARNINGS OF BELGO PAPER COMPANY

Figures of the earnings of the Belgo Paper Company, which were among the first to be issued since the taking over of the company by the new Canadian interests, show the following results to have been obtained.

Average annual net earnings, after liberal charges for maintenance and repairs are available for bond interest and income taxes, are as follows—

Period	Output rate per annum-tons	Earnings rate per annum
Four Fiscal years ended August 31st, 1922	65,303	$1,742,570
Eight months of current fiscal year, Sept. 1922 to April 1923, inclusive 65,303 to	94,000	1,989,054
Two months ended April 30, 1923	94,000	2,750,000

There is nothing noble in being superior to some other man; the true nobility is in being superior to your previous self.

EVERY DAY DANGERS

The largest accident insurance companies are paying about five times as many claims to persons hurt in their homes as they are paying to persons hurt on trains or steamships. They are paying almost as many claims to persons hurt in their homes as they are paying to persons hurt in or by automobiles. There is scarcely any object with which you come in contact at home which has not been a cause of accident to thousands of persons, or which may not be the cause of an accident to you, if you are careless.

Some of the most common accidents in the home occur when persons are stepping out of the bathtub. Of course, a bath mat or rug would tend to eliminate this danger; but our bathrooms are not properly equipped unless there is a rail back of the tub—the towel rod, if solidly attached to the wall, for instance—to take hold of when getting in or out. Those who use shower baths have somewhat similar accidents.

One of the commonest accidents in the home might be considered under the head of traffic difficulties, since the person is hurt because he skids in turning a corner. These accidents are due to unsecured rugs and over-polished floors.

Every spring a number of persons break their fingers, or bruise and cut themselves in beginning the seasonal pastime of swatting flies. And there is another type of accident that is fast becoming so prominent that insurance men will tell you it is a part of the history of our time. I mean the accidents caused by "home-brews."

Serious accidents are always happening in and around the home on account of trifling emergencies. Perhaps you cannot get a painter as promptly as you desired and you decide to do the work yourself. So you mount the step ladder, and in stepping from the ladder to a window-sill you fall, thrusting your arm through the glass. But without even the excuse of a trifling emergency, you do scores of careless things every day. You open your morning newspaper with a quick movement of both hands, so that the double pages will divide in the middle. You have done it many times before, but this morning a corner of the paper strikes you in the eye, painfully injuring it.

Ordinarily, it is the woman who is reckless with inflamable and explosive cleaning materials; and usually it is a man that goes looking for a gas leak with a lighted match. This man is not a myth. Repeated warnings have not abolished this kind of foolhardiness. Probably nothing can—except the explosion he sets off with his naked light.

Infection is one of the dangerous possibilities attendant upon the most trifling accidents. We can often save ourselves from grave consequences by making it a rule to apply even to the smallest cut or scratch disinfectants recommended by physicians.—Travelers Standard.

WESTERN UNION HUMOR

One of our managers reports that a certain well-known young married man of his community burst into the office in the wildest excitement recently and wired his wife's relations as follows: "Twins today; more tomorrow!"

INSTITUTE ITEMS

Effect of Furfural on Pulp

The Institute of Industrial & Domestic Arts,
GARDENVALE, Quebec
Gentlemen:

In a recent conversation relative to the formation of pitch in cooking Sulphite from mixed Balsam and Spruce, the statement was made that the presence of furfural had a distinct effect. Would you have the kindness to let me know your opinion on the influence of this compound on chips during the process of digestion, and assuming that furfural does have a bearing on pitch formation, your suggestion as to method for elimination of it.

Yours very truly,
A. Cook.

Note: The Editor is a better waiter than cook. Perhaps some real sulphite chef, or chemist, can give this student some information; he brings up an interesting question which shows the value and need of research work.

Trouble With Wire Seam; Adjust the Suction

Editor, Questions & Answers
Pulp & Paper Magazine.
Dear Sir:-

Referring to page 528 of the Pulp & Paper Magazine for May 24, the writer notes the opportunity you have to be of practical service to one of your students.

The shrinkage of the paper may be greater with the machine than across the sheet, and to overcome this trouble the writer would suggest the following:—

The formation of this sheet of paper is produced by the shake working in conjunction with the capillary attraction of the table rolls, and at the point where the seam is in the wire, there is less opportunity for this capillary suction to extract the water than there is at other parts of the sheet. Therefore, when the web carrying the mark of the wire seam reaches the first suction box, the suction box acts quickly on the seam, disarranging the fibres to such an extent that during the pressing and drying, where the shrinkage takes place this mark of weakness in the sheet becomes very pronounced.

To overcome a similar trouble a few years ago, the writer had installed in the first suction box, air cocks, thereby bringing the suction on this box in such a manner that it did not disarrange the fibre. To further overcome this trouble, he placed on the ends of the dandy rolls a piece of felt, so that the dandy rolls would operate a little slower in circumferential speed than the travel of the wire. Then also, on two and three suction boxes he arranged air cocks and regulated the suction of air on these boxes so that they accomplished the same percentage of the work, by not disarranging the fibres, as if this were done at the first suction box.

This weakness of the fibres probably is due to the quick suction at the first box instead of the wire seam, as you can readily understand that a wire seam has not the mesh that the other part of the wire has, and therefore, the fibre is more liable to fall apart under suction. To overcome this the suction must be broken to a certain extent.

If the sheet of paper is made from a very free stock; this would contribute towards the pulling apart of the stock at the suction box before the sheet is thoroughly formed.

It is necessary also that all rolls about the wires should be kept thoroughly clean, and the wire should have first class showers. In many cases in making light craft papers, the use of the Max Shower Pipe, which is in reality a moveable steam jet on the return of the wire, has proven, very effective. The use of this shower pipe two or three minutes each hour during the running of the machine will keep the wire thoroughly clean. The Max Pipe is not used in Canada to the writer's knowledge, but several firms making kraft papers and fibre papers in the United States, as well as rope papers, are using this device for keeping the wires clean, if the wire has a tendency to fill up with the chemicals which are used in the beating engines.

From every indication the suction box in this instance is the trouble maker, and by following the suggestions outlined above the sheet can be made so that there will be no difficulties at all with defects as shown in the sample.

Trusting the above will be of assistance to you, and thanking you for the opportunity of helping your students,

I remain,
Yours very truly,
Experienced.

A SHORT STORY

It is but natural that people become discontented at times, and want to change their place of employment, especially so, in the spring—we never seem to get away from the thought that the grass in some other field is just a little greener than it is at home. It might be, however, that if we were able to view our own blessings through the eyes of a stranger we would be like the farmer—who having reached middle age, and having acquired an ordinary farm of about forty acres, he and his wife decided to sell the farm and move into town, where he could work and put the proceeds from the farm out at interest. So they called in a real estate dealer and asked him to sell the place for them. He looked the place over and the following Sunday inserted an ad in the local paper.

The farmer saw the ad, and not recognizing the place described, as his own, telephoned the real estate man and told him that as soon as he had disposed of his own farm he wanted to buy the farm advertised. The real estate man, on recovering from the shock told the farmer that the farm advertised was his own. It was the farmer's turn to be surprised. He said if the real estate man would come out the next day he would settle with him for his trouble; that if the place was as good as the ad said it was, he guessed he did not want to sell.

And so it is with our jobs, if a really good advertising writer were to write up all the good things about the places we fill, run them in our local papers, half of us would be trying to get the very job that we are leaving every day.

Technical Section

REVIEW OF RECENT LITERATURE

Physical Tests and Analytical Methods

A-14 Measuring the effects of temperature and humidity on the dimensions of paper. Harold S. Davis. **Paper 31,** No. 12, 7-8, 10 (Jan. 10, 1923). A conditioning chamber was made from a glass tube 0.75 in. in diameter and 3 ft. long. Air conditioned by bubbling through sulphuric acid of known concentration at a given temperature was passed through the tube, which was surrounded by a jacket through which was circulated water at any desired temperature. Paper strips were suspended in the tube from adjustable supports at the top and were attached at the bottom to aluminum pointers so that a movement of 1 in. at the end of the pointers corresponded to a change of 0.1 per cent. in the length of the paper. Tests carried out with various grades of paper (and illustrated by curves) gave the following results: With constant relative humidity the dimensions of the papers are substantially constant, even though the temperature varies. When the absolute humidity is decreased at a constant temperature the dimensions decrease, and vice versa, but the absolute humidity alone, without consideration of temperature, does not determine the dimensions of the paper. The rate at which the paper increases its dimensions with rising relative humidity is somewhat greater than the rate at which it decreases with falling relative humidity, but the difference is not very great. The rates at which the paper changes its dimensions in a moderate current of air are fairly rapid, being nearly complete in 5 to 10 minutes. The rates are increased with rise in tem-

A-14 K-16 Wrapping Paper as used for the Shipping of Furniture. EDWARD DAHILL, Jr. **Paper Trade J.** 76, No. 7, 51-52 (Feb. 15, 1923). A discussion of the tentative specifications being put out by the Freight Container Bureau for paper used for wrapping both crated and uncrated chairs. Rope stock, 100% kraft, and 100% sulphite are the most used, their quality being in the order named. All rope paper is not extensively used because of its cost and the smallness of the supply; but the addition of some rope stock to any paper is very desirable as it increases the strength, flexibility, tearing resistance, and toughness of the paper. Kraft is preferable to sulphite and is rapidly displacing it.—A.P.-C.

A-14 L-2 Paper for Intaglio Printing. WILLY GRUENEWALD. **Papier-Ztg; Paper,** 31 No. 15, 7-8, 10 (Jan. 31, 1923). The qualities required of paper for intaglio printing are: absorbency (not excessive) combined with a certain firmness and stiffness, but no rattle. The methods of obtaining these properties with various qualities of paper are briefly described.-A.P.-C.

Barkers

C-7 Bark Removing Machine. H. L. CROUSE and C. M. JOHNSON. U.S.A. patent 1,438,904 Dec. 12, 1922. Some of the features of the barker are the arrangement of parts for simultaneously moving both the cutter and the log rest toward or from the feeding means, according to the size of the logs, by means of a single hand control; novel means for carrying and vertically adjusting the cutter head providing a unique type of rotatable gauge, for controlling the length of the cut; novel mounting of the log feeding wheels; and variable speed friction drive for these wheels.—A.P.-C.

Digesters

E-4 F-4 A New Device for Feeding Chips to the Digester. K. WESTAD. **Papir-Journalen,** 10, 6 (April 29, 1922). The device is designed to prevent choking of the conveyor when the chips do not fall into the digester. A system of steam pipes is installed, whereby steam is blown through the chips, expelling the air and causing a steady stream of chips to pour into the digester, and in half the time which otherwise would be necessary. The device works automatically, supplying 4% to 6% more chips to the digester, increasing its capacity and quantity of pulp per cook.—P.B.

Screens & Thickeners

G-6, K-11 Cylindrical Screen. CARL KURTZ-HAHNLE. Ger. patent 361,476, addition to Ger. patent 350,001. **Wochbl. Papierfabr.** 54, 397 (Feb. 10, 1923). The screen used for covering the removable sections of the cylinder is fastened on the inside of the cylinder. —J.L.P.

G-6 Screening and Refining Paper Stock. A. J. HAUG assignor to Sherbrooke Machinery Co. Can. patent 225,978, Nov. 14, 1922. The stock is first put through a knotter (U.S.A. patents 1,183,297 and 1,183,-298 of May 5, 1916). The good stock is put through a riffler (Can. patent 220,545 A. J. HAUG, **Julp & Paper** 20, 791, Sept. 14, 1922; **Paper Trade J.** 75, No. 12, 51, Sept. 9, 1922), (not necessary with groundwood), then through a centrifugal screen (U.S.A. patents 1,147,239 and 1,172,239). The good stock is passed through a second riffler and then constitutes the highest grade of stock. The tailings from the centrifugal are delivered to a tailing screen (U.S.A. patent 1,248,668), the good stock being either sent to a riffler and then constituting a second grade stock, or being returned to the system at any suitable point. The rejections from the tailing screen are sent to a refiner (Can. patent 212,209, A. J. HAUG, **Pulp and Paper** 20, 1027, Nov. 23, 1922; **Paper Trade J.** 74, No. 18, 57, May 4, 1922) which converts them practically all into good fiber.—A.P.-C.

G-6 Bull Screen. J. G. DELAGE. Can. patent No. 226,658, Nov. 28, 1922. The pulp from the grinders flows onto a grating which stops the larger pieces which are suitably removed. The scraper arms of the bull screen have spray nozzles attached to them, so that water is sprayed on to the screen as the arm passes into it but the water is shut off as soon as the arm passes the screen. The outlet pipe from the vat under the screen is equipped with a rectangular valve operated by a float riding on the stock in the vat to prevent the latter from rising sufficiently to flood the screen.—A.P.-C.

G-5 Pulp Thickener. A. J. HAUG, assignor to Sherbrooke Machinery Co. Can. patent 225,977, Nov. 14, 1922. Pulp of practically any consistency is fed to the upper surface of a perforated metal cylinder (Haug, Can. patent 209,992, March 29, 1921; **Pulp & Paper** 19, 1101, 1921) and suitably pressed by means of a smooth-surfaced pressure roll. The water passes through the perforated roll and can be reused, while the pulp adheres to the pressure roll from which it is removed by a doctor blade.—A.P.-C.

Paper Making Operations

K-7 Beating and its History. W. B. Campbell. **Paper Trade J.** 75, No. 26, 49-50 (Dec. 28, 1922); **Pulp & Paper** 19, 671 (June 23, 1921); **Paper Trade J.** 72, No. 24, 64, (June 9, 1921).—A.P.-C.

K-7 The Action of the Beater in Paper Making. Sigurd Smith. **Paper Maker** 64, 723-732 (Dec. 1922); **World's Paper Trade Review** 78, No. 21, 1705 & No 22, 1810; J. ROY. SOC. ARTS 71, 38-56 (Dec. 8, 1922); **Paper Trade J.** 75, No. 26, 47-48 (Dec. 28, 1922) & 76, No. 1, 49-53 (Jan. 4, 1923). The author explains in detail the so-called "fibrage theory" of beating (by "fibrage" is meant the formation of the fibers along the edge of the fly bars as they travel through the stock), and demonstrates the application of this theory in practical beater trials, as well, as its use in beater design. He also describes a duplex beater, which has been directly evolved out of the theory of fibrage, and which is provided with two bedplates located under the roll and separated from each other by a wide gap or chamber. While the flybars are passing over this gap, they gather on their forward edges a fresh fibrage which is abraded against the second bedplate. Various devices may be used for imparting a radial motion to the stock transversely across the edges of the flybars. Numerous trials have confirmed that with two bedplates in use the beating can be carried out in half the time required with a single bedplate and with a saving in power up to 40%. (See also **Paper** 31, No. 11, 17-18, Jan. 3, 1923).—A.P.-C.

K-7 Two-Roll Beater. J. E. Brothel. Fr. patent 514, 865, Nov. 19, 1920. **Papier** 24, 211 (May 1921). **Paper Trade J.** 75, No. 25 30 (Dec. 21, 1922); **Pulp & Paper** 19, 885 (Aug. 25, 1921); **Paper Trade J.** 73, No. 8, 42 (Aug. 25, 1921).—A.P.-C.

K-7 Production of Dense, Strong Paper. CARL G. SCHWALBE. Ger. patent 368,190; addition to 303,498. **Papierfabr.** 21, 82 (Feb. 11, 1923). The waste material is treated with acids or acidic substances at the same time that it is being mechanically worked, as in a kollergang.—J.L.P.

K-8 Kollergangs in the Service of the Paper Industry. ERNST. BLAU. **Papierfabr.** 21, 63-65 (Feb. 4, 1923). A general article on the kollergang with especial reference to the application of electric power. —J.L.P.

K-11 Rotary Screen. J. PARAMOR assignor to Watford Engineering Works, Ltd. Can. patent 225,398, Oct. 31, 1922. Fr. patent 544,664, June 30, 1922. The patent covers means for slowly rotating the drum (either inward-or outward-flow) and giving it a rapid vibratory motion, the two motions being independent and separately adjustable.—A.P.-C.

K-12 Electrical Sectional Drive For Paper Machines. W. STIEL. WOCHBL. **Papierfabr.** 54, 391-395 (Feb. 1 1923). The first part of the article is concerned with a general discussion of the subject; the latter part contains working plans for poly-motor drive with compounded d.c. motors, with synchronous motors, and with d.c. motors and synchronous auxiliary motors.—J.L.P.

K-12 Electric Sectional Drive for Paper Machines. W. STIEL WOCHBL. **Papierfabr.** 54, 532-535 (Feb. 24, 1923). A discussion of polymotor drive with d.c. motors and speed maintenance by automatic regulating devices both in a mechanical and an electrical way.—J.L.P.

K-12 Wire Machine for the Production of Hand-Made Paper with Watermark. PAUL ERKENS. Ger. patent 366,810. **Papierfabr.** 21, 68-69 (Feb. 4, 1923). A cylindrical device is attached to and above shaking end of an ordinary longitudinal wire machine. This device takes up the paper stock, removes the water and couches the resulting sheet on the wire. The cylinder also may be embossed with a design for a watermark.—J.L.P.

K-12 Watermarking Finished Paper. OSWALD KOCH. Ger. patent 367,925. **Papierfabr.** 21, 83-84 (Feb. 11, 1923). The watermarking design is attached to a revolving cylinder over which the paper is passed. —J.L.P.

K-12 Device for Quickly Changing Wires. P. PRIEM. Can. patent 225,323, Oct. 31, 1922. The patent covers dences for rapidly moving out laterally the breast and table rolls and suction boxes.—A.P.-C.

K-12 Paper Machine Shake. J. ROSE assignor to C. H. SCHMEIL. Can. patent 225,537, Oct. 31, 1922. The shake rails are divided into two or more sections each one of which is shaken, the amplitude of the shake of each section being adjusted independently according to requirements.—A.P.-C.

K-12 Device for cleaning Felts of Board and paper machines during operation. Wilhelm Munker. Ger. patent 359,863. **Wochbl. Papierfabr.** 54, 249 (Jan. 27, 1923). A paddle wheel device is arranged in the washing apparatus to produce agitation of the washing liquid through which the felt is passed. — J.L.P.

K-12 Stretching device for Drying-Felts on the Paper Machine. R. Kaltschmidt and A. Kaltschmidt. Ger. patent 359,011. **Wochbl. Papierfabr.** 54 28 (Jan. 6, 1923). — J.L.P.

K-12 Dry Felt. F. Reddaway. Can. patent 225,324, Oct. 31, 1922. The felt is made from hair fibers. It is claimed to have a much longer life than cotton felt. —A.P.-C.

K-12 Felt Guide. J. A. Divine. Can. patent 225,831, Nov. 14, 1922. A sensitizing device is interposed between a swinging roll for adjusting the felt, and the end roll over which the felt passes, so that the slight frictional contact of the edge of the felt with a taper roll is multiplied to effect the movement of the adjusting.—A.P.-C.

K-12 Economy of High Speed Paper Machines. F. Strauch. **Papierfabr.** 21, 23-27 (Jan. 14. 1923). Polemic against F. A. Warburton in **Papierfabr.** 20, 778 (1922). Most of the data is taken from previous articles.—J.L.P.

K-12 Reasons for the Weight Variation of Paper. Pappers-Och Travarutid. For Finland, No. 16 265, 1922. **Papierfabr.** 21, 21-23 (Jan. 14, 1923). The following reasons are given for the weight variation in paper; lack of uniformity in the speed of the paper machine, in the consistency of the stock and in the water pressure, errors in reading the weights of paper

(Continued on page 610)

PULP AND PAPER NEWS

Mr. W. G. MacNaughton, secretary of the American Technical Association was in Montreal last week.

The Laurentide Company, Limited Grand 'Mere, have decided to extend their wood-preparing plant, and have purchased two barking drums 10 ft. x 47 ft. from the Canadian Barking Drum Company, Toronto.

News has been received in Montreal of the arrival in France, of Mr. S. J. B. Rolland, president of the Rolland Paper Company, Montreal. He will also visit Italy and England, and return to Montreal in August.

The Eastern lumber trade is still in good shape, although the orders for American account are not as numerous. Prices keep very firm for all lines, and appearances point to an active and strong market for several months. The St. Maurice Paper Company and the Wayagamack have sold their cut for export to the United Kingdom.

Mr. T. T. Ritchie has accepted a position as Sales Engineer with the Steel Trough and Machine Company Limited, Tweed, Ontario. He has held a similar position with the W. D. Beath & Son, Limited, Toronto, for several years.

Preparations are going on rapidly for the summer meeting of the Technical Section. This will be held in and near Montreal and promises to be one of great interest and enjoyment.

Charles V. Syrett, head of the Victoria Paper and Twine Company, Limited, Toronto, has returned from a business trip to Ottawa, Three Rivers, Shawinigan Falls and Grand 'Mere. While on the trip he visited several of the paper mills in Quebec.

Joseph Chevenert, sales manager for the Wayagamack Pulp and Paper Company, spent last week on a fishing trip to Lac Archangel where he landed one of the biggest catches of the season, speckled trout being his specialty.

W. H. Smith, of the W. H. Smith Co., Limited, paper merchants at Cape Town, South Africa, who is on a visit to Canada, has returned east after a trip through the Canadian West. Mr. Smith, who represents several important Canadian paper companies, was in Toronto for a few days on his way back to South Africa for which country he sails in a few days.

The committee in charge of the annual convention of the Canadian Paper Box Manufacturers' Association, which is to take place at the Clifton House, Niagara Falls, Ont., June 25 and 26, have been assured of a large attendance of the membership from all over Canada, as well as many from the United States. An excellent program of business and entertainment has been prepared and the indications are that the annual gathering will be one of the best yet held.

Heavy rainfalls throughout Northern and Western Ontario last week checked many of the forest fires that had started in various districts and which had given the forestry experts considerable anxiety. Some tracts of timber lands were burnt over in the north country but there were no heavy pulpwood losses as far as have been reported.

The Pacific Burt Company, Limited, has declared a dividend of 1 1-2 per cent on common and 1 3-4 per cent on preferred, payable in New York funds on July 3 to shareholders of record June 15.

Fred W. Halls, head of the Fred W. Halls Paper Company, Limited, Adelaide Street, Toronto, has returned from a trip to Washington where he attended the big Shriners' Convention. Mr. Halls also took in the Kiwanis convention at Atlanta, Georgia.

Brenton C. Pomeroy, representing Byron, Weston and Co., ledger and record papers, Dalton, Mass., called on the Toronto paper trade last week.

At the regular weekly meeting last week of the Toronto branch of the Canadian Paper Trade Association the Buntin Reid Company, Limited, Toronto, and the London Paper Company, Limited, London, Ont., were admitted to membership in the organization.

Samples of an exceptionally fine line of offset paper made by the Howard Smith Paper Company have been sent out by the Allan Paper Company, Simcoe Street, Toronto. The paper, which is known as "Stanwell Offset" is stocked in 25 x 38-80 and 25 x 38-100 lbs.

W. B. Carmichael, head of Carmichael and Co., of Sydney, Australia, representatives of a number of important Canadian paper concerns, was in Toronto last week. Mr. Carmichael will visit Ottawa, Montreal, New York and Chicago before sailing for home.

W. H. Sheriff, of the Hodge-Sherriff Paper Company, Melinda Street, Toronto, has returned from a successful business trip to the Pacific Coast. He reports a growing demand for kraft paper in the Canadian West where the Wayagamack products are well established.

George Gray, of the Toronto office of the Lincoln Mills, Limited, Merritton, Ont., is enjoying a holiday. His work in the Toronto office is being looked after in the meantime by W. A. Woodruff of the Merritton office.

Harold G. Dawson, of W. B. Dawson, Limited, Montreal, was in Toronto a few days last week on his way to attend a meeting of envelope manufacturers in Winnipeg.

The Ontario Government has completed the scale of a quantity of lumber lying in the waters of Lake Temagami which was caught from the blown-down timber of the Temagami forest reserve, to William Mills & Son of North Bay. They paid a lump sum of $5,250 for the estimated 217,425 board feet. The timber is mostly white pine but there is also some red pine and spruce.

Charles F. Buss, general superintendent of the Provincial Paper Co's mills at Thorold and Mille Roches, has moved his family to that town. Mr. Buss spends his time between the Mille Roches and Thorold mills.

HARMSWORTH MILLS ACQUIRE SULPHITE PLANT

St. John's Nfld., May 21. — The Anglo-Newfoundland Development Company, in maturing their plans for new developments in connection with pulp and paper manufacturing in this country, have acquired the property and plant of the Terra Nova Sulphite Company at Anglo Brook, Cloverton. This concern was started several years ago by Messrs. Blackstad and Storm for the purpose of making sulphite pulp.

PRINTERS VISIT PAPER MILLS

One hundred members of the Toronto Club of Printing House Craftsmen had their educational interest in paper making quickened last week when, as guests of the Provincial Paper Mills, Limited, they visited a number of the paper mills in the Niagara district. The party, which was marshalled by Alex. Munro, of the Southam Press, President of the Craftsmen, went over to Port Dalhousie by boat on the evening of June 8 and on to St. Catharines by a special car which remained at their disposal throughout the entire trip. On arrival at St. Catharines the party was taken charge of by T. A. Weldon, Vice-President of the Provincial Paper Mills, Limited, and F. M. H. Cushing, the company's engineer. Although the visitors were the guests of the Provincial a feature of the outing was the tour of other mills as well, to which the Provincial people secured entry, and which illustrated the excellent spirit prevailing among the paper companies in the Niagara peninsula. Following dinner at the Welland House Mr. Weldon escorted the party over to the Kinleith Paper Company's plant where Superintendent William Anderson explained the various processes as they were revealed in the manufacture of paper. On Saturday morning the visitors were paraded by Mr. Cushing, Mr. Weldon, C. F. Buss, John B. Piper and B. B. Macguire, all well known officials of the Provincial Paper Mills, and taken in the special car to Thorold where the company's plant was thoroughly inspected. The other half of the morning was devoted to an inspection of the plant of the Interlake Tissue Mills where the interesting processes of tissue and toilet paper manufacture and the making of specialty lines were displayed, then on to Niagara Falls for luncheon at the Clifton House. On the return trip to St. Catharines there was a more or less hurried inspection of the Ontario Paper Company's plant at Thorold where one of the company's boats was unloading a cargo of pulpwood. This pulpwood was trailed by the visitors from the time it left the boat until it found lodgment on the huge piles from whence some of the wood was being sent over the carriers into the grinders and on through the various processes until the final emergence as the finished paper. The visitors were greeted at the mill by Warren Curtis, the general manager, and Superintendent John Ryan. There was also a hurried call at the Lincoln Mills, Limited, plant at Merritton and then a final dinner at the Welland House in St. Catharines tendered by the Provincial Paper Mills, Limited. Here an opportunity was given the knights of printers' ink to express their appreciation of the company's courtesy which they did in a formal resolution presented by Charles Conquergood, of the Canada Printing Ink Co., Ltd., and Thomas B. Palmer of the Acton Publishing Company. To the vote of thanks Mr. Weldon and Mr. Cushing responded and with a pleasant sail back across the lake an extremely enjoyable and profitable outing was brought to a close.

BECKER & CO., LTD.

The profits of Messrs. Becker & Co. Ltd, pulp importers, London, for the past year, after providing debenture and note interest amounts to £82,695 19s. 1d. Last year £23,211 2s. 6d. was carried forward, the total now reaching £105,907 1s. 7d.

Thomas Owen & Co., Ely Paper Mill, Cardiff, big producer of newsprint, have declared a dividend of 7½ p.c. less tax, on ordinary shares, making 10 p.c. for the year. The profits, after providing for taxation, etc. reached £29,449, plus £4,669 brought forward from the previous year

SUMMER SCHOOL AT UNIVERSITY OF MAINE

The Chemistry Department of the University of Maine will conduct a summer school course in pulp and paper Chemistry and technology from June 25th to August 4th.

The University of Maine was the first institution to offer a course in pulp and paper in this country and the success of its graduates is an excellent measure of the value of such a school. The men who have graduated from this school have been unusually successful and already many of them are heads of research departments, superintendents, chief chemists, managers, etc.

The work given in pulp and paper at the summer school is designed to meet the specific needs of students who desire, and are qualified, to take pulp and paper courses and also for *pulp and paper mill* men with or without technical training, who have had practical experience and who desire to gain a scientific knowledge of important phases of pulp and paper manufacture and testing or phases of work with which they are unfamiliar.

All work completed will be given the regular University credit for either the Bachelor's or Master's degrees. Transference of credits to other institutions will be arranged for as during past years for those so desiring.

The courses which are to be offered this summer give an option of six different subjects whereas in former years only three have been given. Three courses are offered to those interested in pulp and three to those interested in paper. Anyone wishing to take part pulp work and the rest paper or vice-versa may do so providing the courses do not conflict.

Examinations for students desiring credit are held on August 3rd and 4th.

A certificate is granted upon satisfactory completion of pulp and paper courses.

Applications for admission to the pulp and paper courses should be made in person, or in writing and forwarded to the University as soon as possible.

Equipment

Adequate equipment and supplies will be available for all of the work undertaken. All necessary laboratories in Aubert Hall will be opened and special arrangements will be made for students and pulp and paper specialists to do special work, if properly qualified. Climatic conditions in Orono are unexcelled for work and recreation during the summer. The University Library, well supplied with general and reference books and periodicals on chemistry and pulp and paper will be open daily except Saturday afternoon and Sunday.

Expenses

Tuition for the session of six weeks, covering all charges for instruction, library and general laboratory use is $20.00 for residents of Maine, and $25.00 for residents of other states. For registration above fifteen recitation time hours (six credits) weekly, an additional charge of $1 per hour is made. This does not apply to pulp and paper courses where six credit hours is the maximum and will require a student's full time.

Rooms in dormitories (occupants to provide pillows, pillow cases, sheets and towels) $2.00 per week for single room, $1.00 when two persons occupy a room. Meals in Balentine Hall will be $7.00 per week. Arrangements will be made for men who come with families.

Correspondence

Correspondence concerning chemistry and paper courses should be addressed to C. A. Brautlecht, Chemistry Department, University of Maine, Orono, Maine.

Application for rooms and general information should be sent to Dean J. S. Stevens, Director of Summer Ses- Department, University of Maine, Orono, Maine.

samples on the quadrant scale, and error in the regulating mechanism on the machine.—J.L.P.

K-12 Production of Dense, Strong Paper. CARL. G. SCHWALBE. Ger. patent 368,189; addition to 303,498. **Papierfabr.** 21, 82 (Feb. 11, 1923). The moist sheet, containing pulp mucilage, is subjected to a high pressure and dried at a moderate temperature.—J.L.P.

Special Papers, Etc.

K-23 Paper with a Foam-Like Effect. FARBWERKE V. MEISTER LUCIUS & BRUNING. Ger. patent 368,258, **Papierfabr.** 21, 83, (Feb. 11, 1923). To produce this effect a water- soluble, amorphous, condensed sulphur-containing compound of an aromatic nature is used.—J.L.P.

K-23 Process for the Production of Dense, Hard Paper C. G. SCHWALBE. Ger. patent 366,322, **Papierfabr.** 21, 13 (Jan. 7, 1923). Additional density and strength, together with improved sizing, are obtained by adding "protective colloids," as plant mucilage, glue, casein, etc., to colloidal plant mucilage mentioned in Ger. patent 303,498 for the production of dense, hard paper.—J.L.P.

K-23 Production of Transparent Paper for Window Envelopes, Etc. GEORGE BERGMANN. Ger. patent 366,811. **Papierfabr.** 21, 69-70 (Feb. 4, 1923). Transparent paper is made directly on the paper machine. The process requires two longitudinal wire machines. —J.L.P.

K-23 Production of White or Variegated Shaded Paper or Board. RINGE & CO., Ger. patent 367,868. **Papierfabr.** 21, 71 (Feb. 4, 1923). Glue or starch products are used in the process as binding materials after being subjected to a very intimate mixing.-J.L.P.

K-23 Production of Color Mixtures Containing Oils, Fats, or Waxes in an Unsaponified Condition for the Manufacture of Marbled or Glazed Paper and the Like. RINGE & CO. Ger. patent 367,805. **Papierfabr.** 21, 71 (Feb. 4, 1923). The color mixture containing oils, fats, or waxes and a color is subjected to a very intimate mixing process,—J.L.P.

K-23. Machine for Drying Blue-Print Paper. B. J. Hall. Can. patent 224,779, Oct. 17, 1922. The sensitized paper is dried by passing it over a suitably heated (hot water, steam, gas, or electricity) convex, smooth-surfaced body, the uncoated surface of the paper being in contact with the hot surface.—A. P. C.

K-23 Process for the Production of Transparent and Fadeless Japanese Rice Paper. CARL SCHUMANN. Ger. patent 366,505. **Papierfabr.** 21, 46 (Jan. 21, 1923). Rice paper is treated with a mixture of dilute color paste containing glycerine, castor oil, gum arabic, and an aniline dye.—J.L.P.

L. — Articles Produced from Pulp and Paper

L-4 Paper Cup and Method of and Apparatus for Making Same. G. J. BOHLMAN, assignor to American Water Supply Co. Can. patents 225,109 to 225,114, inclusive. Oct. 24, 1922.— A.P.-C.

L-4 Paper Cups and Vessels. R. HOLMAN, assignor to Vortex Manufacturing Co. Can. patent 225,207, Oct. 24, 1922.—A.P.-C.

L-7. Production of Material Suitable for Spinning from Disintegrated Birds' Feathers. Martin Jonas. Ger. patent 364,567. **Papierfabr.** 21, 14 (Jan. 14,1923.) grated in a mechanical way.—J. L. P.

L-7 Wood Fiber Yarns and Fabrics. R. W. SINDALL. **J. Textile Inst.** 13, 133-139 (1922); **Chem. Abs.** 16, 4353 (Dec. 10, 1922). The cutting off of jute importations to Germany and Austria during the war resulted in the opening of more than 500 paper yarn factories by the end of 1917. Short accounts are given of the different inventions for converting wood to wood pulp and the latter to yarns. The effect of spinning on strength and elongation is shown by the following figures: plain dry pulp strips, breaking length 4,170 m., elongation 2.84%; rolled cylindrical 5,180 m., and 2.71%; rolled and twisted 6,410 m. and 3.06%. In general finished fabrics from wood pulp have about half the strength of jute fabrics of the same make and weight. During the past few years the activities of the manufacturers have been devoted to the improvement of the year in the direction of durability, water-resistant properties and tensile strength by the treatment of the pulp or yarn with various chemicals before spinning or twisting. Tannin fixed with gelatin increased the tensile strength about 25% and when fixed with aluminum acetate the increase was 44%.—A.P.-C.

L-0 Paper Towels. A. EK. assignor to BROWN CO. Can. patent 226,092, Nov. 14, 1922. The towels are made from sulphate pulp which is digested in such a way as to leave a small quantity of saponified resin in the interstices of the paper.—A.P.-C.

General Equipment

M-12 A Continuous Specific Gravity Recorder. P. W. CODWISE. **Paper Trade J.** No. 20, 54-56 (Nov. 16, 1922) The author describes a new type of continuous recording instrument (invented by S. D. Wells) designed to record the specific gravity of liquids, which operates on the principle of weighing a constant volume of the solution and recording this relative weight as a continuous operation. A detailed survey has been made of the application of this machine to the specific problem of giving accurate records of the Beaumé test of the tub sizing solution used in the manufacture of fine papers. The various difficulties encountered and the methods of overcoming them have been detailed. It is concluded that this instrument is a valuable contribution to the scientific control of many manufacturing processes and of distinct interest to those concerned with the management of the same. —A.P.-C.

Standardization

R-0 Tentative Report on Paper Standardization. Paper Trade J. 75, No. 11, 38, 40, 42 (Sept. 14, 1922). Text of the tentative report submitted by the technical committee appointed by the U. S. Bureau of standards, covering specifications of quality, testing of paper, sampling of paper for test, and tolerances.—A.P.-C.

R-0 Report on Simplification of Page Sizes. Paper Trade J. 75, No. 19, 36, 38, 40, 42 (Nov. 9, 1922). Text of the report of the committee appointed by the U. S. Bureau of Standards.—A.P.-C.

SIR W. PRICE MAY JOIN RIORDON BOARD

Quebec, June 8. — (Star Special). — It is stated that Sir William Price is to become a director of the Riordon Company which is now being reorganized. To what extent the Price Brothers' interests will enter in the combination, however, could not be ascertained.

UNITED STATES NOTES

According to an estimate covering the three months ended May 31, the International Paper Company added to its surplus after all charges and preferred dividends slightly less than $800,000. With no break in current rate of operations for six months ending June 30, the company will probably earn better than $6 a share on 199,230 shares of common stock. Despite the increase in wages voluntarily granted to mill employees this spring, with mills continuing operations at capacity as at present, the company should be able to show net profits available for dividends on preferred stock of at least $350,000 monthly for the balance of the year. Preferred dividend requirements amount to $125,000 monthly, or $1,500,000 for the year. This would be at an annual rate of between $13 and $14 a share on common stock, though due in part to inclusion of income from other sources.

The methods and procedure used to obtain a light weight paper which is free from electrical conducting particles are summarized in a report of the paper division of the United States Bureau of Standards. This bulletin describes the manufacture of condenser paper for power condensers.

Paper manufacturers of Holyoke, Mass., have turned down the demand of the papermakers of the vicinity for an increase in wages approximating 10 per cent together with propositions involving abolition of Saturday night work and a guarantee of a certain number of days' work each week. The unions in turn threaten drastic action unless the demands are conceded.

The annual convention of the American Pulp and Paper Mill Superintendents' Association, held at Springfield, Mass., May 31, June 1 and 2, while not as large in point of attendance as the meeting at Kalamazoo last year, proved in every other way more successful than any previous gathering of the association. About 400 members were on hand at the opening session, and these were joined on the succeeding days by a number of men identified with various other branches of the paper and allied industries. A letter from Philip T. Dodge, president of the International Paper Company, led to the formation of a newsprint section of the organization. A sizable increase in membership is looked for as a result of this action. A report of the convention was printed in the Pulp and Paper Magazine last week.

John Strange, a pioneer paper manufacturer and business man of the Fox River Valley, died suddenly of heart disease while addressing a Wisconsin Rotary Club, May 28. Mr. Strange, who was 71, headed the John Strange Paper Company and the John Strange Pail Company of Menasha, and the Stevens Point Pulp and Paper Company of McGill. He is survived by two sons and two daughters.

J. T. Potter, J. B. Stebbins and F. J. Barber of North Adams, Mass., Albert A. Frederick of the J. A. DeVito Company and G. O. Dudley of the Sears Roebuck Company, Boston, are back of the Vermont Power and Paper Company just incorporated in Massachusetts to develop a paper and power business in Pownal, Vt. The new concern has an authorized capital of $350,000. A paper mill with a capacity of 25 tons a day is being erected at Pownal.

Paul L. Brownie, comptroller, and Henry L. Cassidy, statistician, have tendered their resignations to the officers of the American Writing Paper Company. Mr. Brownie has not indicated his plans for the future. Mr. Cassidy may locate in New York City. L. S. Nold, recently appointed treasurer of the company, will probably take over the duties vacated by Mr. Brownie.

The Great Southern Lumber Company of Bogalusa, La. is looking about for an addition to its plants. W. H. Sullivan, president and other officials have just been inspecting Warrior river sites with the view to erecting a great paper manufacturing and lumber plant on its banks.

Judson G. Rosebush, president of the Patten Paper Company and director in several other paper mills in the Middle West, has writen a book entitled, "The Ethics of Capitalism." This is a discussion of the central issues in the industrial problem from the viewpoint of one who is both a capitalist and a trained sociological student.

At the weekly meeting of the Salesmen's Association of the Paper Industry, held June 4 in the rooms of the new Forest Industries Club, Pershing Square, N. Y. plans were formulated for the fall convention of the Association, scheduled for Chicago, beginning October 9. Fred P. Whitely of the Howard Paper Company has been made chairman of the general committee on arrangements.

Arrangements are under way for the convention of the Cost Association of the Paper Industry and tentative plans just made call for the selection of Philadelphia and a date some time early in the fall for the event. An arrangement committee comprising mill representatives from various localities has been appointed.

Fire in the plant of the P. H. Graham Paper Company, Boston, June 2, caused damage to the extent of about $50,000.

The northeastern division of the American Pulp and Paper Mills Superintendents' Association held its annual meeting last week at the Bangor House, Bangor, Me. Business sessions, a banquet and visits of inspection to nearby paper plants comprised the program. B. T. Larrabee of the S. D. Warren Paper Company, Cumberland Mills was elected chairman and W. D. Sommerville of the Eastern Manufacturing Company was chosen secretary and treasurer. Groveton, N. H. was selected as the place of meeting for the fall get-to-gether some time in October.

The Berkshire local division of the Cost Association of the Paper Industry meets on June 26 at the Irving House, Dalton, Mass. Under the direction of President Wm. W. Howe, this division has held very successful meetings monthly during the past season and the work has been of material benefit to the cost accountants in the section.

C. R. McMillen, vice-president of the Union Bag and Paper Company, who is also a director of the St. Maurice Paper Company, gave out a statement in New York last week branding as gossip the report that either of the two companies was to figure in a consolidation. The rumor, he said, probably originated from a transaction involving the purchase of the Belgo Paper Company by a syndicate of New York and Canadian bankers.

The New Jersey Department of Agriculture is waging a successful fight against the gypsy moth. In three years the egg masses found in the entire State have been reduced from 3,000,000 to 1,140. The last figure was reported about a week ago when the scouting work for the present season was completed. This great depletion has been brought about through creosoting the egg masses, which kills the eggs.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, June 12.—Although the local paper trade is not brisk as during the last two months, it is still on a fair basis. Some jobbers report a moderate amount of activity, while others state that business is dull. One generally looks for a falling off in the summer (if we can so describe the present season) as the printing industry slackens, thus curtailing the demand. The reports from the mills are to the effect that orders are coming in at a satisfactory rate, and that prospects are good.

Taking another aspect of the pulp and paper industry, it may be pointed out that the companies have incurred severe losses owing to the recent forest fires, and the destruction, if continued, must reflect in the cost of the products. No concern, however well managed and however strong financially, can afford to have its source of raw materials depleted to such a serious extent without being affected.

During the week the newsprint situation has undergone a slight change. Owing to seasonable reasons, the demand for surplus production has eased although there is still a very strong call for paper. Spot prices are inclined to be softer. The output of both Canadian and American mills continues to be at a high rate, but according to one authority, it would not be surprising if some of the American converting mills were forced into other lines, owing to the price of groundwood, which leaves little or no margin of profit on newsprint at the prevailing price.

The board market is inclined to be less satisfactory than it was. Apparently the American demand has slackened, and as is usually the case when business drops in this section, an outlet, particularly now for patent coated, is being sought in Canada, at prices under the usual quotations, this is bound to have an effect on the Canadian industry, which has previously suffered from the offerings of boards at low figures.

The pulp market remains practically unchanged. Groundwood continues firm, although the demand is slightly lowered. Sulphite is a dull spot, with bleached on the old basis, the demand remaining good. The recent forest fires, in addition to destroying a large amount of pulpwood, burned 3,000 tons of pulp at Chicoutimi, stored on the wharf ready for shipment. The Bay Sulphite Company at Port Alfred, P. Q., also lost their wood-pile, containing about 12,000 cords of pulpwood. The loss is fully covered by insurance.

It is reported that an American company have under consideration the construction of a sulphite mill in Nova Scotia.

Toronto Market News

Although June has not opened up with any great rush in pulp and paper circles there appears to be good reason for belief that the present month is going to produce much better business than May. Many producers and jobbers profess to see the end of the dull period and believe that from now on there will be greater activity in all paper lines. Certain it is that there is a much better tone to market conditions generally, although it is admitted that there is room for improvement as far as the distributing end of the trade is concerned. Some of the wholesale paper merchants are complaining that sales are still light while others, after casting up their accounts, discovered that May sales were up to those of the previous month and that sales are gradually increasing. That paper consumption is gradually increasing after a rather quiet month or two is the testimony of many in the trade while the outlook generally is viewed with optimism. The board mills, for instance, report better sales to the paper box trade which is picking up again, and it is believed that the container industry is in for a period of expansion. In Toronto alone several paper box factories are either on the way or being projected, which augurs well for the future of the board business. Manufacturing stationers and other branches of the converting end of the paper business are fairly busy and report considerable business in sight. One branch of the paper trade that is really busy is that of flour sack manufacturers, mills making this line being several months behind in their orders. This, of course, is the busy season in that department. Prices on wrapping paper, paper bags, tissues, toilets, parchment papers, etc. remain firm and no change is looked for in any of these lines for some time. Manufacturers and dealers in the papers mentioned say there is a gradually increasing demand for them and that on the whole they have little to complain of now that the turn of the tide appears to have been reached after a rather dull period. Envelope manufacturers report a fairly strong market with a demand that is readily absorbing their output, while book and writing mills are busy. The agent handling the output of one of the big Ontario book paper mills states that he has orders well ahead and that he was having more difficulty in filling orders promptly than in booking them. Other book paper mills are equally busy although it must be said that the wholesalers are not stocking heavily in that or in any other line of paper just now.

PULP.—There is no great activity in the pulp market. Groundwood pulp, which has been fairly active of late has fallen off slightly in demand. None of the paper mills are stocking up and are buying just about as they require it. There is sufficient demand, however, to take care of the output at the present time and neither paper nor pulp mills have any stocks of size on hand. While nominal quotations on groundwood range from $35.00 to $38.00 purchases have been made as low as $25.00

This of course is ridiculous in view of wood values and conversion costs. Some bleached sulphite may be had at $90.00 and unbleached at $65.00 for news grade and $70.00 for book grade.

NEW YORK MARKETS

New York, June 9—(Special Correspondence)—Although reports tell of mills curtailing production in some cases while taking inventory or preparing for the inventory period, activity in the paper manufacturing industry as a whole continues on a fairly broad scale. Manufacturers of some kinds of paper continue

to drive their plants at a fast pace. Print paper, book and fine paper mills are keeping well occupied and there has been little or no reduction in the output of these papers excepting in cases where it was necessary to shut down machines temporarily for repairs, but on the other hand indications are not wanting that production of coarse papers, of some specialties and of certain descriptions of box boards has been slowed down to some degree as a result of the quieter market obtaining for these commodities.

Jobbers in New York say they are kept comparatively busy filling the orders they are favored with by customers. Demand for most kinds of paper has lost a certain degree of that keenness which existed a short while ago, but there is nevertheless a good and steady call for supplies from printers, publishers, department stores, merchants and other important users of paper, and current demand has every characteristic of being very healthy. There is very little buying for stock. Consumers seem to feel that they can get paper when needed and get it fairly quickly, and they are therefore placing orders chiefly as their requirements develop. Moreover, jobbers and dealers appear to be carrying small stocks, which is an important fact when the statistical position of the industry is considered.

Paper prices exhibit much strength. Prospects are at present that there will be few changes of consequence during the coming summer. It is true that raw materials of some kinds are receding in cost, but this is a situation that invariably arises at just this season and it is more than probable that the trend of raw material prices will turn in an upward direction in the near future, as it usually does. Moreover, it must be remembered that paper which is being made and delivered today is manufactured of material purchased some time ago on a much higher raw stock market. Furthermore, it cannot be denied that paper prices, in comparison with those of any other manufactured commodity, are low today. Manufacturers have exerted every possible effort to keep prices stabilized and have not taken advantage of market conditions to raise their quotations as have so many manufacturers of other products. Therefore unless demand for paper drops off to a very great extent, which certainly seems improbable at present, prices seem destined to hold pretty firm over the summer.

Newsprint is firm and in steady demand. Local publishers continue to put out big issues, and it is becoming a regular matter for New York newspapers to print announcements that so and so many columns of advertising have been omitted because of lack of space. Display advertising is setting a new record and publishers are up against a problem trying to run all the advertisements offered them.

Book papers are firmly quoted and are into consuming channels at a consistently good rate. Fine papers also are in relatively active demand. Mills in the Holyoke district are kept busy and are running at close to capacity. Prices are firmly maintained. Wrapping papers are in fair call, with orders of a volume which can be called routine for this season. Tissues are rather slow though mills mostly have some good orders on file which absorb the bulk of their output.

Box boards are just about holding their own in price and demand. Current buying by paper box manufacturers is nothing out of the ordinary, yet it is fully up to normal, and quotations on board show no important change. Plain chip board is quoted at about $60

HANS LAGERLOEF, President and Treasurer
ORVAR HYLIN, Vice President
MAURICE LONDON, Secretary

TRADE MARK

Lagerloef Trading Co., Inc.

52 Vanderbilt Avenue
NEW YORK, N. Y.

Telephones
Murray Hill 4246 4247

WOOD PULP

SOLE AGENTS IN U. S. A., CANADA, MEXICO AND CUBA FOR

Finnish Cellulose Association
Helsingfors, Finland

AND

Finnish Wood Pulp Union
Helsingfors, Finland

a ton f. o. b. New York, and news board at $62.50 to $65.

Paper exports from the United States were of fair volume during April though slightly below March, the decline approximating six per cent from the record level for the year thus far reached in March, according to Government figures. The total value of paper exports in April was $2,181,839, compared with exports valued at $2,324,928 in March. Quantity figures were as follows: Newsprint, 2,950,509 pounds in April, against 3,978,361 pounds in March; book paper, 2,119,224 pounds in April, against 2,383,962 pounds in March; wrapping, 2,291,564 pounds in April, against 2,551,732 pounds in March; writing, 611,301, pounds in April against 4,253,288, pounds in March.

GROUND WOOD—There is not much trade activity in mechanical pulp. Consumers are buying only when pressed by necessity for supplies, and current demand is almost entirely against direct requirements. Users seem imbued with the belief that there is plenty of ground wood to go around and that consequently there is no incentive for them to stock up, and grinders and dealers frankly admit present orders are mainly for small tonnage. There is, however, a fairly steady tone to prices since the sagging of quotations a short time ago. Domestic producers are quoting around $35 a ton at grinding plants for prime spruce gound wood for prompt shipment, and it is stated that not much pulp is available at under this figure though now and then a sale is reported at a little less. Moreover, it is pointed out that the fact grinders are accumulating stocks at this time is an unimportant market factor since they invariably pile up pulp at this season to last them over the dry period later in the year.

CHEMICAL PULP—Demand for chemical wood pulp fails to show any expansion of note. Buying is of moderate volume but limited almost entirely to supplies immediately needed by consumers. The technical position of the market is unchanged. Importers view matters with confidence and firmness, and insist they cannot see how prices can go lower for some months to come on account of the strong market conditions in Scandinavia and the general sold up position of manufacturers there. The continued slow demand, however, has not strengthened the price tone. If anything, the tendency is a trifle softer. At least reports from authoritative sources say that buyers are succeeding in getting some lots of pulp at slight concessions, as sellers are finding it necessary to shade asked figures to move pulp in certain directions.

Unbleached sulphite and kraft pulp are probably the firmest items in the market as present. Foreign prime unbleached sulphite is quoted at 3.40 to 3.50 cents a pound ex dock New York, and Scandinavian kraft at around 3.35 cents on the dock. Bleached sulphite shows a little easier tendency. No. 1 foreign bleached is reported held for around 4.75 cents per pound ex dock New York, but half prime is said to have been bought by paper mills down to 4 cents. Prices of domestic pulps rule fairly steady although most of the business transpiring is on contracts.

RAGS—Papermaking rags continue to exhibit a declining price tendency. With the exception of several classes of stock, the movement toward mills is light and dealers are finding it necessary to accept the prices bid by consumers to get orders. In other words, it is mostly a buyer's market, and papermakers consequently are securing the rags desired at very nearly their own figures. Roofing stock has eased off again. Sales of No. 1 packing have been reported at 1.25 cents a pound f. o. b. New York, and No. 2 roofing stock is said to have been bought by felt paper mills down to 1.10 cents New York. In fact, some mills are reported bidding no more than one cent a pound at shipping points for No. 2 packing and the probabilities are they are getting some supply at this price basis.

New cuttings of nearly all kinds are in slow demand. No. 1 white shirt cuttings are offered by dealers at 12.75 cents a pound at shipping points, and few mill orders are in the market. Washables are available at 4.75 cents per pound at dealers' points, fancy shirt cuttings at 6 cents, unbleached muslins at 11.50 cents, blue overall cuttings at 8 cents and light silesias at 8.25 cents. Old whites and thirds and blues display a sagging price tendency after having held firm for a lengthy period.

PAPER STOCK—As one trade authority describes it, "the bottom seems to have dropped out of the waste paper market." There is but slight demand and prices are declining at a rate that makes it difficult to tell from day to day what market levels actually are. Some sharp recessions have occurred this week. Folded newspapers have moved down in price to 85 cents a hundred pounds f. o. b. New York, and No. 1 mixed paper to 75 cents, while city mixed has sold at 55 cente New York. Old magazines have declined to around 1.70 cents a pound New York, and ledger stock to 1.80 cents. Shavings display a steadier tone than other grades though this class of stock is lower also. Hard white shavings of No. 1 grade are quoted by New York dealers at 4 cents a pound or slightly higher, and No. 1 soft white shavings at 3.25 cents. Old kraft paper is hol ding its own at 2 to 2.10 cents a pound at shipping points.

OLD ROPE AND BAGGING — Prices of old rope are easy and market levels for this papermaking material are lower than they have been in a long time. Domestic manila rope in No. 1 condition is reported bringing only around 5.75 cents a pound at dealers' shipping points, while it is said some purchases have been below this basis. Old bagging is largely neglected by buyers and prices are uncertain. It is known, however, that mills can buy No. 1 scrap bagging freely at 1.25 cents a pound at shipping points, and roofing bagging at 90 cents a hundred pounds.

FIBRE BOARD MANUFACTURE

Wonderful improvements have been made in the methods of manufacturing fibre board containers during the last few years. A new rotary container making and printing machine was recently invented which will handle fibre board from 84 to 120 in. wide and a correspondent of *The Times* (Trade Supplement) gives the following particulars:

This machine will take a sheet of board, trim the ends, slot it, crease both ways, cut out for the staple flap, and then print the board in two colours, all in one operation. This machine can be equipped to produce two complete containers with a single operation, and it will handle the raw material in varying thicknesses. Both kinds of fibre-board packing case, the solid and the corrugated, are produced in different ways to make them suitable for the special goods they are to hold.

In the corrugated series, one of the best types is known as the centre special slotted case. This can be stored in a flat condition when not in use, thus saving warehouse space, and it can be produced in the following five varieties:— it can be made with double-faced board having a resistance of 275 lb. to the square inch; it can be made of double wall or double strength corrugated board, glued together so as to make one piece, the case being fastened with a regular taped corner; a third variety is known as the strong box of double faced board, with a resistance of 200 lb. to the square inch, which has an extra double two-inch fold, giving a triple edge to the case, and ensuring that the contents would not touch the crease of the covering flaps; a fourth variety can be made of the double wall pattern, but with a triple taped corner; while a fifth style can be made of corrugated board resisting 200 lb. to the square inch, lined with a thin sheet of board having a resistance of 175 lb. to the square inch.

A significant advantage about all these varieties is that a typical wooden case, when filled with the same contents, weighed 4½ lb. more than the first, third and fifth types described and 4 lb. more than the second and fourth. Fibre board containers are now being used for such heavy goods as machinery parts, electric cable, mattresses, furniture and for many other articles which were formerly packed in wooden boxes. The material used for the construction of fibre board packing cases is so adaptable that almost any thickness and density are procurable, so that a case for heavy goods can be obtained as easily as one for lighter traffic.

WHAT THE BASS VIOL SAID:

(Try this on your tympanum)

Zoom Ah! Boom Ah! Zoom Ah! Boom Ah!
Zur, Zoom Boom! Zur Zoom Boom!
Zur! Zur! Zur! Boom Ah! Boom Ah!
Zum! Zum! Zum!

These are the actual words, hoarse, raucous and resounding, that the big instrument spoke to me as I sat "watching" the orchestra and I said, "What a wholly unnecessary "noise"that is." As compared to the ethereal tones of the violins, the truly melodic notes of the clarinets, the soul-searching strains of the violon cello, even the rattle and clatter and bang of the drums and their tempo-keeping collection of collateral instruments, it seemed that the big bass viol was not even making "music."

So I was thinking when suddenly the taut bow broke, every strand parted at once, and the music went "lamely" on "without" the "help" of the viol, until a new bow could be procured from those mysterious depths under the stage.

Then came the thought that this big, coarse fellow "was" necessary, that he sustained, held up the lighter, finer, more attenuated instruments and that his place was a place of honor on a par with any other.

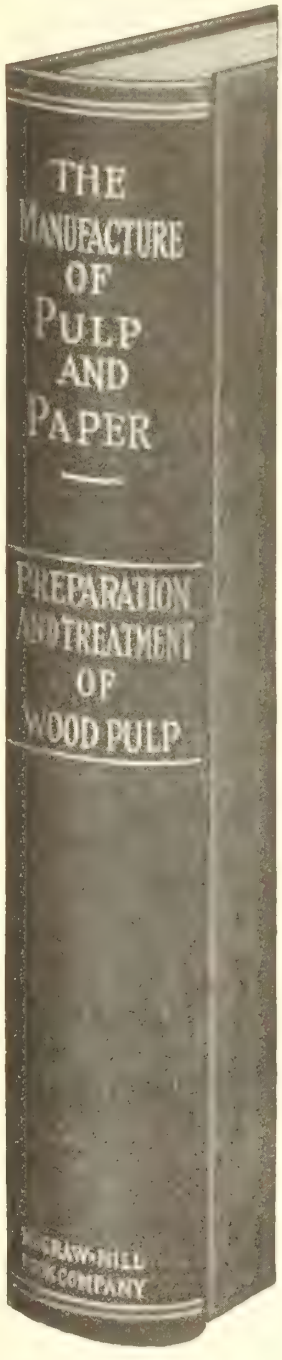
And again the obvious application comes home (does it not) to the fellows who do the dirty and so-called menial work. If they do this work well with what coarse instruments come to their hands, they should not be without honor in their own and others' estimation, the honor that is due to a "basic" and a "necessary" function, of sustentation in industry and business.—H. E. R. in The Neponset Review.

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(See Page 67)

Tenders for Pulpwood and Timber Limit.

Tenders will be received by the undersigned up to and including the 22nd of June, 1923, for the right to cut pulpwood and timber on a certain area situated in the watershed of the Trout and Chapleau Rivers in the districts of Sudbury and Algoma, comprising an area of 1,049 square miles.

Tenderers shall state the amount per cord on pulpwood that they are prepared to pay as a bonus in addition to dues of 80 cents per cord for spruce and 40 cents per cord for other pulpwood, or such other rates as may from time to time be fixed by the Lieutenant-Governor in Council, for the right to operate a Kraft pulp mill and a paper mill

Tenderers shall also be required to say what they are prepared to pay, per thousand feet Board measure, for the following classes of timber, over and above the upset prices in addition to Crown dues:

Red and White Pine	Upset price	$6.00 per M. ft. B. M.
Spruce (too large for pulpwood)	—	$5.00 per M. ft. B. M.
Jackpine (banksian)	—	$2.50 per M. ft. B. M.

The Crown dues on Pine including Jackpine being $2.50 and on Spruce $2.00 per M. ft. B. M., or such other rates as may from time to time be fixed by the Lieutenant-Governor in Council.

The successful tenderer shall be required to erect a mill or mills within the limit or at some point in Ontario approved by the Minister, and to manufacture the wood into Kraft pulp, and also such portion thereof into Kraft paper when required so to do.

Parties making tenders will be required to deposit with their tender a marked cheque, payable to the Honourable the Treasurer of the Province of Ontario, for fifty thousand dollars ($50,000), which amount will be forfeited in the event of the successful tenderer not entering into agreement to carry out conditions, etc

The said $50,000 shall remain on deposit until the Kraft pulp mill, as provided by terms and conditions of sale, is erected and in operation. Any timber cut in the meantime shall be subject to payment of dues and bonus as accounts for same are rendered. After the said pulp mill is erected and in operation the deposit of $50,000 may be applied on account of bonus dues as they accrue, but the regulation dues as mentioned above shall be paid in the usual manner as returns for cutting of wood and timber are received and accounts rendered.

The highest or any tender not necessarily accepted

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All tenders should be enclosed in sealed envelopes and marked plainly on outside "Tender for Trout Chapleau Pulp and Timber Limit."

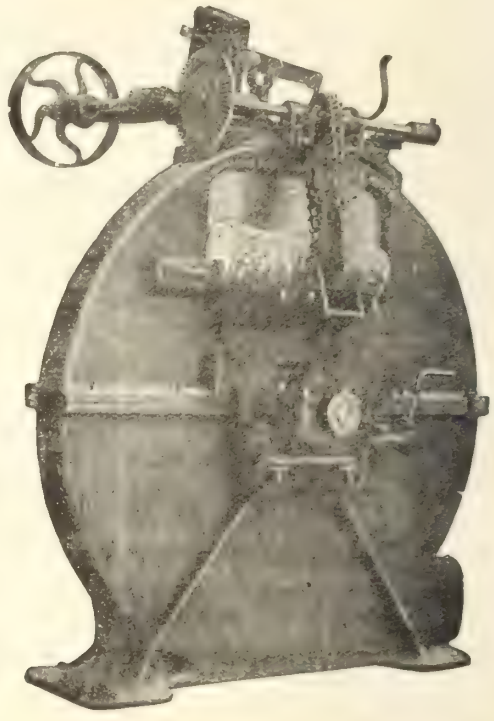
BENIAH BOWMAN,
Minister of Lands and Forests

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N. B. — No unauthorized publication of this notice will be paid for.

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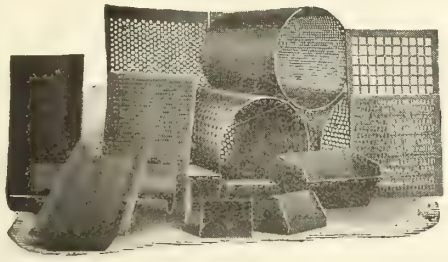
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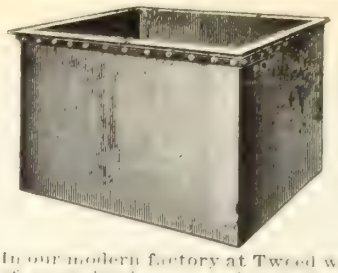
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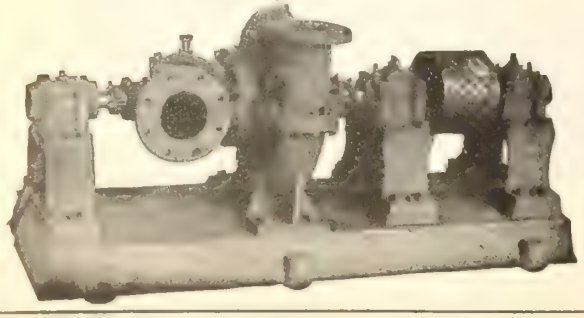
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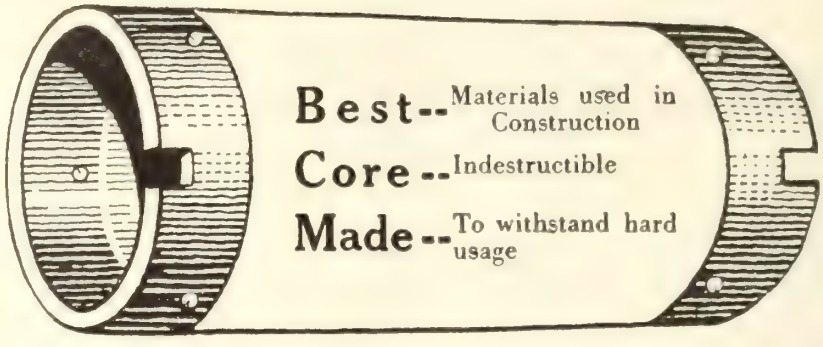
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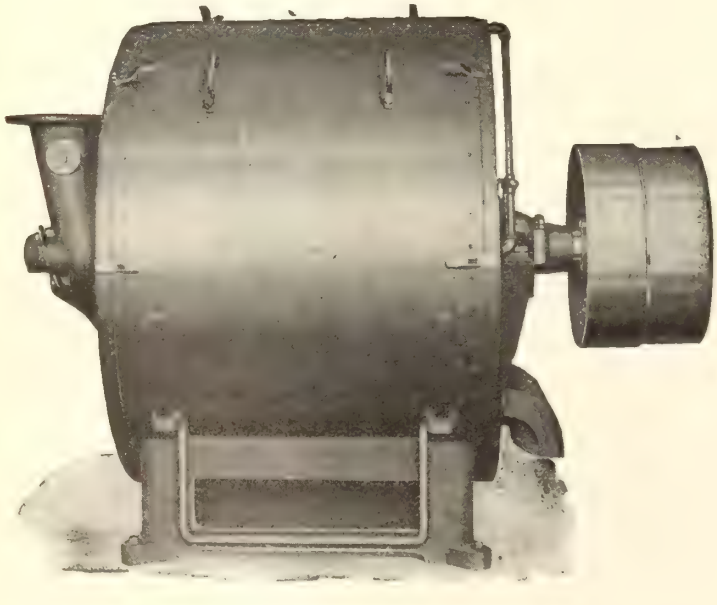
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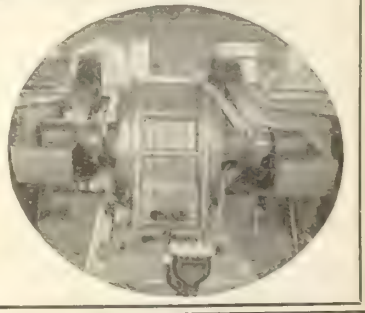


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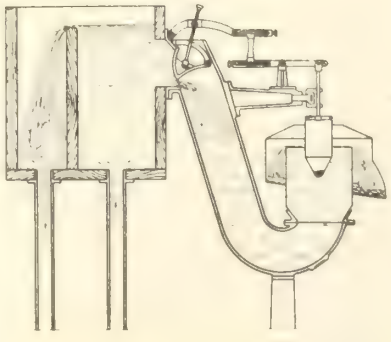
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Can. Vegetable Parchment Co., Ltd

Paper Cores:
Elixman Paper Core Co.

Paper Cutting Machines:
Cameron Machine Co.
Walmsley, Charles & Co., Ltd.

Paper and Pulp Machinery.
American Voith Contact Co., Inc.
Beloit Iron Works.
Beveridge Supply Co., Ltd.
Bertrams, Ltd.
Black-Clawson Co.
Boving Hydraulic & Eng. Co., Ltd.
Cameron Machine Co.
Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Dowingtown Mfg. Co.
Hamilton Co., Ltd., Wm.
Hydraulic Machinery Co., Ltd.
Johnson Wire Works, Ltd.
Norwood Engineering Co.
Mackinnon Steel Co., Ltd.
McAvity & Sons, Ltd., T.
Mills Works & Machinery, Ltd.
Morrison, J. L. Co.
Port Arthur Shipbuilding Co., Ltd.
Pulp and Paper Mill Accessories, Ltd
Pusey & Jones Co.
Sherbrooke Machinery Co., Ltd.
Smith Morgan Co.
Stebbins Eng. & Mfg. Co.
Ticonderoga Machine Works.
Walsh Plate & Structural Works, Ltd.
Walmsley, Chas & Co.
Waterous Engine Works Co., Ltd
Wesbye, P .P.

Paper Stock:
Pulp & Paper Mill Accessories, Ltd.

Paper Testers:
Canadian Fairbanks-Morse Co., Ltd.
Perkins, B. F. & Son. Inc.
Waterous Engine Works Co., Ltd

Penstocks:
Dominion Engineering Works, Ltd.
Horton Steel Works, Ltd.
Hamilton, William Co., Ltd.
Hendrick Manufacturing Co.
MacKinnon Steel Co., Ltd.
Walsh Plate & Structural Works, Ltd
White, W. H.

Penstocks, Wood Stave:
Canadian Pipe Company, Ltd.
Pacific Coast Pipe Co., Ltd.
White W. H.

Pillow Blocks:
Canadian Fairbanks-Morse Co., Ltd.
Canadian Link-Belt Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Victoria Foundry Co., Ltd.
Waterous Engine Works Co., Ltd

Pipe — Riveted:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.

Pipe — Wood Stave:
Canadian Pipe Company, Ltd.

Pipes — Brass & Copper:
Tallman Brass & Metal Co., Ltd.

Pipes — Steel:
Horton Steel Works, Ltd.

Piping — High Pressure:
Canadian Fairbanks-Morse Co., Ltd.
Crane, Ltd.
McAvity & Sons, Ltd., T.
Northern Foundry & Machine Co.

Piping Hydraulic:
Canadian Fairbanks-Morse Co., Ltd.
Dodge Manufacturing Co.
Hydraulic Machinery Co., Ltd.

Plate and Tank Works:
Can. Des Moines Steel Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Can. Chicago Bridge & Iron Co., Ltd.
Dominion Engineering Works, Ltd.
Goldie & McCulloch Co., Ltd.
Hamilton, William Co., Ltd.
Hendrick Manufacturing Co.
Horton Steel Works, Ltd.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Walsh Plate & Structural Works, Ltd
Waterous Engine Works Co., Ltd

Plates — Calenders:
Norwood Engineering Co.

Pneumatic Collecting and Conveying Systems:
Sturtevant, B. F. Co. of Canada, Ltd.

Pneumatic Thickeners:
Sherbrooke Machinery Co., Ltd.
Waterous Engine Works Co., Ltd

Pneumatic Tools:
Canadian Ingersoll-Rand Co., Ltd.

Power Factor Correcting Devices:
Griswold & Co.

Power Condensers:
Griswold & Co.

Presses:
Boving Hydraulic & Eng. Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Hydraulic Machinery Co., Ltd.
Northern Foundry & Machine Co.
Port Arthur Shipbuilding Co., Ltd.

Presses — Pulp:
Wm. R. Perrin, Ltd.

Press Rolls:
Bertrams, Ltd.
Dominion Engineering Works, Ltd.
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Sherbrooke Machinery C., Ltd.
Waterous Engine Works, Co. Ltd.

Pressure Tanks:
Steel Trough & Machine Co., Ltd.

Pulleys:
Boving Hydraulic & Eng. Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Canadian Link-Belt Co., Ltd.
Dominion Engineering Works, Ltd.
Hamilton, William Co., Ltd.
Northern Foundry & Machine Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Victoria Foundry Co., Ltd.
Waterous Engine Works, Co. Ltd.

Pulp Slashers:
Hamilton, William Co., Ltd.

Pulp Stones:
American Stone Co., Inc.
Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
International Pulp Stone. Co.
Lombard & Co.
Miramichi Quarry Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.
Smallwood Stone Co.
Smallwood-Low Stone Co.

Pulp Stone Burrs:
Can. Fairbanks-Morse Co., Ltd.

Pulp Thickeners:
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.
Sherbrooke Machinery Co., Ltd.

Pulp Wood:
Crittsinger, Burt C.
New Ontario Colonization Co., Ltd.

Pumps:
Bertrams, Ltd.
Boving Hydraulic & Eng. Co., Ltd.
Can. Fairbanks-Morse Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Carthage Machine Co.
Dominion Engineering Works, Ltd.
Downingtown Mfg. Co.
Goldie & McCulloch Co., Ltd.
Goold Shapley & Muir Co., Ltd.
Hydraulic Machinery Co., Ltd.
Hamilton, Wm. Co., Ltd.
Harland Engineering Co., Ltd.
Lawrence Machine Co.
McAvity, T. and Son.
Northern Foundry & Machine Co.
Ontario Wind Engine and Pump Co., Ltd.
Peacock Bros., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Smart-Turner Machine Co., Ltd.
Sherbrooke Machinery C., Ltd.
Victoria Foundry Co., Ltd.
Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co. Ltd.
Weir, Ltd., G. & J.

Pumps — Stock:
Canadian Blower & Forge Co., Ltd
Canadian Fairbanks-Morse Co., Ltd.

Pumps — Boiler Feed:
Canadian Allis-Chalmers, Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Goldie & McCulloch Co., Ltd.
Harland Engineering Co., Ltd.
McAvity, T. and Sons. Ltd.
Northern Foundry & Machine Co., Ltd.

Pyrometers:
The Bristol Co

Rag Cutter Knives:
Beveridge Supply Co., Ltd.
J. W. Bolton & Sons, Inc.
Pulp & Paper Mill Accessories, Ltd

Rails: — Re-laying:
Canadian Equipment Co., Ltd.
Gartshore, J. J.

Recording Ammeters:
The Bristol Co.

Recording Instruments:
Canadian Fairbanks-Morse Co., Ltd.
The Bristol Co.
Peacock Bros., Ltd.

Recording Wattmeters:
The Bristol Co.
American Voith Contact Co., Inc.

Refiners:
Bertrams, Ltd.
Boving Hydraulic & Eng. Co., Ltd
Can. Fairbanks-Morse Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Sherbrooke Machinery Co., Ltd.
Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co. Ltd.

Regulators — Steam.
Beveridge Supply Co., Ltd.
Pickles, W. F.
The Under-Feed Stoker Co. of Canada. Limited.

Regulators:
Mills Works & Machinery, Ltd.
The Under-Feed Stoker Co. of Canada Limited.

Reverse Gears:
Canadian Fairbanks-More Co., Ltd.
Russel Brothers.

Rock Drills:
Canadian Ingersoll-Rand Co., Ltd.

Rods — Copper, Brass and Bronze:
Imperial Trading Co.
Tallman Brass & Metal, Ltd.

Rods — Welding:
Tallman Brass & Metal, Ltd.

Roll-Winding Machines:
Cameron Machine Co.
Port Arthur Shipbuilding Co., Ltd.

Roofings — Plastic and Liquid:
Barrett Co., Ltd.
Beveridge Supply Co., Ltd.
Can. Johns-Manville Co., Ltd.
Reed & Co., Ltd., Geo. W.

Rope:
Jones & Glassco.
Goldie & McCulloch Co., Ltd.

Rosin Size:
Hercules Naval Stores
Vera Chemical Co. of Canada, Ltd
Wilson Paterson Co.

Rotary Cutter Knives:
J. W. Bolton & Sons, Inc.
Pulp and Paper Mill Accessories, Ltd

Rotary Sulphur Furnaces:
MacKinnon Steel Co., Ltd.
Stebbins Eng. & Mfg. Co.

Safes:
Can. Fairbanks-Morse Co., Ltd.
Goldie & McCulloch Co., Ltd.

Salt:
The Canadian Salt Co., Ltd.

Salt Cake:
M. Gottesman & Co., Inc.
The Kalbfleisch Corporation

Save-Alls:
Canadian Ingersoll-Rand Co., Ltd.
MacKinnon Steel Co., Ltd.
Pulp and Paper Mill Accessories, Ltd.
Port Arthur Shipbuilding Co., Ltd.
Sherbrooke Machinery Co., Ltd.
Waterous Engine Works, Co. Ltd.

Slitters and Rewinders:
Cameron Machine Co.
Port Arthur Shipbuilding Co., Ltd.

Saw Frames:
Can. Fairbanks-Morse Co., Ltd.
Goold Shapley & Muir Co., Ltd.
Ontario Wind Engine and Pump Co. Ltd.
Waterous Engine Works, Co., Ltd.

Scales:
Can. Fairbanks-Morse Co., Ltd.
International Bus. Machines Co. Ltd

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Union Screen Plate Co. of Canada
Sherbrooke Machinery Co., Ltd.
Waterous Engine Works, Co., Ltd.

Screens:
American Voith Contact Co., Inc.
Bertrams, Ltd.
Boving Hydraulic & Eng. Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Can. Fairbanks-Morse Co., Ltd.
Can. Link-Belt Co., Ltd.
Hamilton, William Co., Ltd.
Hendrick Manufacturing Co.
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Pulp and Paper Mill Accessories, Ltd
Sherbrooke Machinery Co., Ltd.
Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co., Ltd.
Westbye, P. P.

Separators — Oil:
Canadian Fairbanks-Morse Co., Ltd.
Goldie & McCulloch Co., Ltd.

Separators — Steam:
Canadian Fairbanks-Morse Co., Ltd.
Crane Co., Ltd.
Foxboro Co., Inc.
Peacock Bros., Ltd.

Shafting:

Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Northern Foundry & Machine Co., Ltd
Victoria Foundry Co., Ltd.
Waterous Engine Works, Co. Ltd

Sheet Lead:
The Canada Metal Co., Ltd.

Sheets — Copper, Brass and Bronze:

McAvity & Sons, Ltd., T.
Tallman Brass & Metal, Ltd.

Sheet Samplers:
John Date.

Shingle Machines:
Canadian Fairbanks-Morse Co., Ltd.
Victoria Foundry Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.

Shower Pipes:
Dominion Engineering Works, Ltd.
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.

Shredders:

Size:

Vera Chemical Co., Ltd.

Slab Chippers:
Boving Hydraulic & Eng. Co., Ltd.
Waterous Engine Works, Co., Ltd.

Slitters and Re-Winders:
Bertrams, Ltd.
Cameron Machine Co.
Canadian Fairbanks-Morse Co., Ltd
Dominion Engineering Works, Ltd.
Langston Co., Samuel M.
Morrison, The J. L. Co.
Ticonderoga Machine Works.
Walmsley, Charles & Co., Ltd.

Slitting and Roll-Winding Machines:
Cameron Machine Co.

Sinks & Tops — Laboratory, Acid Proof:
Alberene Stone Co.

Smelter Lining:

Alberene Stone Co.
Beveridge Supply Co., Ltd.

Smoke Stacks:
Can. Des Moines Steel Co., Ltd.
Dominion Engineering Works, Ltd.
Hamilton Co., Wm.
Hendrick Manufacturing Co.
Horton Steel Works, Ltd.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
The Steel Trough & Machine Co., Ltd.
Waterous Engine Works, Co., Ltd

Snow Plows:
Canadian Equipment Co., Ltd.

Soda Ash:
Wilson, Paterson Co.

Soot Cleaners:
Beveridge Supply Co., Ltd.

Solder:

Canada Metal Co.
McAvity T. & Son.
Tallman Brass & Metal, Ltd.

Spiral Conveyors:

Canadian Fairbanks-Morse Co., Ltd
Can. Link-Belt Co., Ltd.
Waterous Engine Works, Co., Ltd.

Splicing Tissue:
Bemis Manufacturing Associates.

Splitters:
Carthage Machine Co.
Hamilton, William Co., Ltd.

Split Pulleys — Wood and Steel:
Canadian Fairbanks-Morse Co., Ltd.
Waterous Engine Works, Co., Ltd.

Sprinkler Tanks:
Can. Des Moines Steel Co., Ltd.
Hendrick Manufacturing Co.
Horton Steel Works, Ltd.

Sprocket:
Canadian Fairbanks-Morse Co., Ltd.
Can. Link-Belt Co., Ltd.
Hamilton Gear & Machine Co.
Hamilton, William Co., Ltd.
Northern Foundry & Machine Co.
Sherbrooke Machinery Co., Ltd.
Waterous Engine Works, Co., Ltd.

Stacks:
Dominion Engineering Works, Ltd.
Hamilton, William Co., Ltd.
Hendrick Manufacturing Co
Port Arthur Shipbuilding Co., Ltd.

Stackers:
Canadian Link-Belt Co., Ltd.

Tanks — Iron and Steel:
Horton Steel Works, Ltd.
MacKinnon Steel Co., Ltd.
Walsh Plate & Structural Works, Ltd.
Waterous Engine Works, Co., Ltd.

Steam Appliances:
Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
McAvity, T. and Son.
Pulp & Paper Mill Accessories, Ltd.
Waterous Engine Works, Co., Ltd.

Steam Engines:
Port Arthur Shipbuilding Co., Ltd.
Sturtevant Co. of Canada, Ltd., B. F
Walmsley, Charles & Co., Ltd.

Steam Regulator:
Beveridge Supply Co., Ltd.
Crane Co., Ltd.
McAvity, T. & Son.

Steam Specialties:
Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd
Crane Co., Ltd.
Pulp & Paper Mill Accessories, Ltd
Waterous Engine Works, Co. Ltd.

Steam Shovels:
Canadian Equipment Co., Ltd.

Steel Barrels:
Dominion Engineering Works, Ltd

Steel Factory Equipment:
Steel Trough & Machine Co., Ltd.

Steel Plate Construction:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.

Steel Storage Tanks:
Steel Trough & Machine Co., Ltd.

Steel Shop Boxes:
Steel Trough & Machine Co., Ltd.

Steam Turbines:
Canadian Fairbanks-Morse Co., Ltd.
Goldie & McCulloch Co., Ltd.
Sturtevant, B F. Co. of Canada, Ltd

Stokers — Mechanical:
Babcock & Wilcox, Ltd
Combustion Engineering Corporation Limited.
The Under-Feed Stoker Co. of Canada, Limited.

Stones — Pulp:
American Stone Co.
Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
International Pulp Stone Co.
Lombard & Co.
Miramichi Quarry Co.
Pulp & Paper Mill Accessories, Ltd
Smallwood Stone Co.
Smallwood-Low Stone Co.

Stoneware — Chemical, Acid-Proof:
Alberene Stone Co
Beveridge Supply Co., Ltd.

Stop Log Winches:
Dominion Engineering Works, Ltd.
Hamilton Co., Wm.
Northern Foundry & Machine Co., Ltd
Foundry, Ltd.

Strainers — Water:

Can. Link-Belt Co., Ltd.
Babcock & Wilcox, Ltd.

Straw Cutters:
Bertrams, Ltd.

Can. Des Moines Steel Co., Ltd.
Dominion Engineering Works, Ltd.
MacKinnon Steel Co., Ltd.

Structural Steel Works:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.
Walsh Plate & Structural Works, Ltd.

Stuff Chests:
Can. Des Moines Steel Co., Ltd.
Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co., Ltd.

Suction Rolls:
Dominion Engineering Works, Ltd.
Hydraulic Machinery Co., Ltd.

Sulphate of Alumina:
H. D. Pochin & Co., Ltd.
Gottesman, M. & Co., Inc.
Imperial Trading Co.
The Kalbfleisch Corporation
Wilson — Paterson Co.

Sulphite Mill Equipment:
Alberene Stone Co.
Beveridge Supply Co., Ltd.
Dominion Engineering Works, Ltd
Hamilton, William Co., Ltd.
Hydraulic Machinery Co., Ltd.
MacKinnon Steel Co., Ltd.
McAvity, T. & Son.
Port Arthur Shipbuilding Co., Ltd.
Walsh Plate & Structural Works, Ltd
Waterous Engine Works, Co., Ltd.

Sulphite Pulp:

Mattagami Pulp & Paper Co., Ltd

Sulphate Mill Equipment:
Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Hamilton, William Co., Ltd.
MacKinnon Steel Co., Ltd.
McAvity, T. & Son.
Port Arthur Shipbuilding Co., Ltd.
Stebbins Eng. & Mfg. Co.
Texas Gulf Sulphur Co.
Walsh Plate & Structural Works, Ltd
Waterous Engine Works, Co., Ltd.

Sulphite Mitscherlich:
M. Gottesman & Co.

Sulphur:

Union Sulphur Co.
Texas Gulf Sulphur Company.

Sulphur Burners:

Hydraulic Machinery Co., Ltd.
Carthage Machine Co.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Stebbins Eng. & Mfg. Co.
Walsh Plate & Structural Works, Ltd.
Waterous Engine Works, Co., Ltd.
Walsh Plate & Structural Works, Ltd

Superheaters — Steam:

Babcock & Wilcox, Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Goldie & McCulloch Co., Ltd.

Switchboards:
Canadian Fairbanks-Morse Co., Ltd.
Canadian General Electric Co., Ltd.
Harland Eng. Co., Ltd.
Northern Electric Co., Ltd.

Tanks:
Canadian Ingersoll-Rand Co., Ltd.
Can. Des Moines Steel Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Can. Chicago Bridge & Iron Co., Ltd
Canadian Pipe Co., Ltd.
Dominion Engineering Works, Ltd.
Goldie & McCulloch Co., Ltd.
Goold Shapley & Muir Co., Ltd.
Hamilton, Wm. Co., Ltd.
Hendrick Manufacturing Co.
Horton Steel Works, Ltd.
Ontario Wind Engine and Pump Co Ltd.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd
Pacific Coast Pipe Co., Ltd.
Reed Co., Ltd., Geo. W.
The Steel Trough & Machine Co., Ltd.
Toronto Iron Works, Ltd.
Victoria Foundry

Tanks — Acid:
Hendrick Manufacturing Co.
White, W. H.
Walsh Plate & Structural Works, Ltd.

Tanks — Elevated — Steel:

Horton Steel Works, Ltd.

Tanks — Lead Lined:
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Port Arthur Shipbuilding Co., Ltd.

Tanks — Welded:
Can. Des Moines Steel Co., Ltd.
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.

Tanks — Ore:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.
Smart-Turner Machine Co., Ltd., The
Waterous Engine Works, Co., Ltd.

Tanks — Storage:
Hendrick Manufacturing Co.
Ontario Wind Engine and Pump Co. Ltd.
Port Arthur Shipbuilding Co., Ltd.

Tanks — Wood:
Canadian Pipe Company, Ltd.
Pacific Coast Pipe Co.
Goold, Shapley & Muir Co., Ltd.
Ontario Wind Engine and Pump Co Ltd.
Port Arthur Shipbuilding Co., Ltd.
White, W. H.

Telephone — Automatic:
Northern Electric Co., Ltd.

Telephone — Apparatus:
Northern Electric Co., Ltd.

Temperature Controllers:
The Bristol Co.

Temperature Instruments:
The Bristol Co.
Canadian Fairbanks-Morse Co., Ltd.

Testers — Green Stock:
John Date.

Tanks, Steel, Pressure and Storage.
Hendrick Manufacturing Co.
Horton Steel Works, Ltd.

Timberland Brokers:
Crittsinger, Burt C.
Can. Woodland & Pulp Agency
Lacey, James D. & Co.

Thermometers:
The Bristol Co.
Canadian Fairbanks-Morse Co., Ltd.
Canadian Ingersool-Rand Co., Ltd.

Thrust Bearings:
Canadian Fairbanks-Morse Co., Ltd.
Kingsbury Machine Works

Tissue — Splicing:
Bemis Manufacturing Associates.

Towers:
Horton Steel Works, Ltd.
Hendrick Manufacturing Co.
Walsh Plate & Structural Works, Ltd.

Tower Linings:
Beveridge Supply Co., Ltd.
Stebbins Eng. & Mfg. Co.

Transformer:
Northern Electric Co., Ltd.

Transmission Machinery:
Boving Hydraulic & Engineering Co. Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Can. Link-Belt Co., Ltd.
Hamilton Co., Ltd., Wm.
Port Arthur Shipbuilding Co., Ltd.
Renold of Canada, Ltd., Hans.
Waterous Engine Works, Co., Ltd.

Traps — Steam:
Can. Johns-Manville Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Crane Co., Ltd.
Goldie & McCulloch Co., Ltd.
Sturtevant, B. F. Co. of Canada, Ltd.

Travelling Cranes:
Boving Hydraulic & Eng. Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Smart-Turner Machine Co., Ltd.

Trolleys:
Boving Hydraulic & Eng. Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Northern Crane Works, Ltd.
Smart-Turner Machine Co., Ltd.
Waterous Engine Works, Co., Ltd.

Troughs:
Hendrick Manufacturing Co.

Trucks:
Hamilton Gear & Machine Co.
Canadian Fairbanks-Morse Co., Ltd.
Northern Crane Works, Ltd.

Trucks — Pulp:
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.

Tubes — Copper, Brass, Bronze:
Tallman Brass & Metal, Ltd.
McAvity & Sons, Ltd., T.

Tubes Cleaners:
Babcock & Wilcox, Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.

Turbines:
Boving Hydraulic & Eng. Co., Ltd.
Dominion Engineering Works, Ltd.
Goldie & McCulloch Co., Ltd.
Hamilton Co., Ltd., Wm.
Smith, S. Morgan.
Sturtevant Co. of Canada, Ltd., B. F
Terry Steam Turbines Co.

Twine:
Beveridge Supply Co., Ltd.
Victoria Paper & Twine Co., Ltd.

Valves:
Canadian Fairbanks-Morse Co., Ltd.
Crane Co., Ltd.
Diamond State Fibre Co. of Can., Ltd
Jenkins Bros., Ltd.
Goldie & McCulloch Co., Ltd.
Hydraulic Machinery Co., Ltd.
McAvity T. and Son.
Northern Foundry & Machine Co.
Port Arthur Shipbuilding Co., Ltd.
Smart-Turner Machine Co., Ltd.
The Under-Feed Stoker Co. of Canada, Limited.

Vapor Absorption Systems:
Ross, J. O. Engineering Co.

Vats:
Hendrick Manufacturing Co.
White, W. H.

Ventillators:
Can. Sirocco Co., Ltd.
Reed, Co., Ltd., Geo. W.
Sturtevant Co. of Canada, Ltd., B. F.

Warping Machinery:
Russel Brothers

Water Intake Screens:
Canadian Link-Belt Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.

Water Power Plants:
Boving Hydraulic & Eng. Co., Ltd.

Water Supply Systems:
Canadian Fairbanks-Morse Co., Ltd.
Can. Des Moines Steel Co., Ltd.
Goold, Shapley & Muir Co., Ltd.

Water Wheels:
Boving Hydraulic & Eng. Co., Ltd.
Dominion Engineering Works, Ltd.
Hamilton Co., Wm.
McAvity & Sons, Ltd., T.
Northern Foundry & Machine Co., Ltd.
Smith, S. Morgan.

Welding Plants:
Canadian Fairbanks-Morse Co., Ltd.

Wire Cloth for Paper Machines:
Christie, Geo., Ltd.
Capital Wire Cloth Mfg. Co., Ltd.
Johnson Wire Works, Ltd.
Niagara Wire Weaving Co.
Pulp & Paper Mill Accessories, Ltd.
Taylor, Ltd., H. S.
Tippet & Co., Ltd.
Tyler, W. S. Co.
United Wire Works, Ltd.
Westbye, P. P.
Waterous Engine Works Co., Ltd.
Whyte, W.

Wood Preservatives:
Barrett Co., Ltd.
Beveridge Supply Co., Ltd.

Waste:
Bertrams, Ltd.
Canadian Fairbanks-Morse Co., Ltd
Christie, John Co.

Waterproof Case Lining:
Beveridge Supply Co., Ltd.

Water Filters:
Canadian Ingersoll-Rand Co., Ltd.
Sherbrooke Machinery Co., Ltd.

Water Tanks:
Can. Des Moines Steel Co., Ltd.
Canadian Pipe Co., Ltd.
Goold Shapley & Muir Co., Ltd.
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.
Pacific Coast Pipe Co., Ltd.
Walsh Plate & Structural Works, Ltd
White, W. H.

Welding:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.

Welding Rods:
Tallman Brass & Metal, Ltd.

Waste Paper:
John C. Christie Co.

Wet Machines:
Canadian Fairbanks-Morse Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Carthage Machine Co.
Dominion Engineering Works, Ltd.
Eng. & Machine Works of Can., Ltd
Hamilton, William Co., Ltd.
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Northern Foundry Machine Co., Ltd.
Sherbrooke Machinery C., Ltd.
Waterous Engine Works Co., Ltd.

Winders:
Canadian Fairbanks-Morse Co., Ltd.
Cameron Machine Co.
Langston Co., Samuel L.
Port Arthur Shipbuilding Co., Ltd.
Ticonderoga Machine Works

Wire Cloth:
The Johnson Wire Works, Ltd.

Wire Cleaners:
Perkins, B. F. & Son, Inc.

Wiring Devices:
Northern Electric Co., Ltd.

Wood Stave Pipes:
Canadian Pipe Co., Ltd.
Pacific Coast Pipe Co., Ltd.
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Advertisements other than "Employment Wanted" or "Employees Wanted" will be inserted in this department at the rate of 20 cents per agate line (14 agate lines make one inch). $2.80 per inch, each insertion, payable in advance. Space measured from rule to rule. When four or more consecutive insertions of the same advertisement are ordered a discount of 25 per cent. will be allowed.

Advertisements of "Wanted Employment" or "Wanted Employees" will be inserted at the rate of two cents a word, net. Cash must accompany order. If box number is used, enclose ten cents extra for postage in forwarding replies. Minimum charge 50 cents.

PAPER-MILL ENGINEER wanted an experienced, well-trained, engineer, familiar with the design and construction of pulp and paper mills, including the sulphate process. State education, experience, age, salary expected. Arthur D. Little, Inc., 30 Charles River Road—Cambridge 39, Mass.

I KNOW the manufacture newsprint paper; have had 25 years experience, 8 years in present position as Mill Superintendent. For personal reasons, would accept position of Superintendent or Assistant Superintendent. Can furnish best of references.—Address Box 582 Pulp and Paper Magazine, Gardenvale, Que.

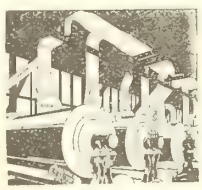
MILL AGENCY WANTED. — Two Scotch gentlemen with office in Glasgow and having first-class connection with Buyers of Paper and Boards in Scotland and North of England, already representing English Mills in that area, are open for sole direct Agency of another good reliable Mill favorably situated for competing in the same market. Highest references. Reply in first instance to Box 579 The Pulp and Paper Magazine of Canada, Gardenvale, Quebec, Canada.

DRAFTSMAN WANTED preferably mechanical engineer with extensive experience on paper machine design. Reply giving age, education, experience, salary. Apply: Box 591, Pulp & Paper Magazine, Gardenvale, Que.

WANTED — Second hand 3 pocket pulp grinder of standard make in good condition using stone 27″ x 54″ with Barber pressure pump also Groundwood Wet Machine. Apply giving price, full dimensions and where machinery may be inspected. to Box — 589, Pulp & Paper Magazine, Gardenvale, Que.

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ALPHABETICAL LIST OF ADVERTISERS

See Classified List on Page 73.

Unpaged advertisements appear in every other issue.

A

Alberene Stone Co., Ltd. . . . . .
Abitibi Power & Paper Co. Ltd. . . 84
Acer, J. A. H. & Co., Ltd. 74
American Voith Contact Co., Inc. . .
American Stone Co. 24
American Woodpulp Corporation . . 24
Ayers, Limited 11

B

Babcock & Wilcox . . . . . .
Barrett Co., Ltd., The . . . . . .
Barber, W. J. & Co., Ltd. . . . . .
Bathurst Company, Ltd. 82
Bates & Innes, Ltd. 25
Bemis Manufacturing Association . .
Bertrams, Limited 69
Belgo Paper Co., Ltd., The 82
Beveridge Supply Co., Ltd. 28
Black-Clawson Co., The . . . . . .
Boivin Louis 8
Bolton, John W. & Sons, Inc. . . . 26
Boving, Hydraulic & Engineering . .
Company, Ltd. 17
Bristol Co., The 80
Brompton Pulp & Paper Co., Ltd. . . 82
Burgess, E. T. . . . . .

C

Canada Metal Co., Ltd. 30
Cameron Machine Co. 3
Canadian Combustion Co., Ltd. . . . 17
Canadian Barker Co. 12
Canada Foundries & Forgings, Ltd. 72
Canadian Des Moines Steel Co., Ltd. 87
Canadian Elixman Co., Ltd. 76
Canadian Equipment Co., Ltd. . . . .
Canadian Fairbanks-Morse Co., Ltd. 32
Canadian Ingersoll-Rand Co., Ltd.
Canadian Mead-Morrison Co., Ltd. 68
Canadian Milk Products, Ltd. . . . .
Canadian Johns-Manville Co., Ltd. . .
Canadian Nashua Paper Co., Ltd. . . 86
Canadian Paperboard Co., Ltd. . . 24
Canadian Link-Belt Co., Ltd. 5
Canadian Robert Dollar Co., Ltd. . .
Canadian Pipe Co., Ltd. . . . . .
Canadian Sirocco Co., Ltd. . . . . .
Canadian S K F Co., Ltd. . . . . .
Canadian Vegetable Parchment Co,
Limited 74
Canadian Westinghouse Co., Ltd. . .
Carey, Jas. L. 22
Capital Wire Cloth & Mfg. Co., Ltd. 26
Christie, George, Ltd. . . . . .
City of Hull . . . . . .
Clayton, Neil & Jones, Ltd. . . . . .
Combustion Engineering Corporation, Ltd. 7
Crane, Ltd. . . . . .
Crittsinger, Burt Co., Inc. . . . . .
Cleveland Stone Co., The . . . . . .

D

Date, John . . . . . .
Deitcher Brothers 23
Dept. of Lands, Forests & Mines,
Ontario . . . . . .
Dodge Mfg. Co. of Canada, Ltd. . . 68
Dominion Belting Co. . . . . .
Dominion Engineering Works, Ltd. 19
Dominion Oxygen Co., Ltd. . . . . .
Donnacona Paper Co., Ltd., The . . 24
Don Valley Paper Co., Ltd., The . . 24
Downingtown Mfg. Co. 25
Dryden Paper Co., Ltd. 24
Dunlop Tire & Rubber 69
Dunham, C. A. Co. . . . . .

E

Elixman Paper Core Co., Inc. 76
Elk Fire Brick Co., of Canada, Ltd. 30
English China Clays, Ltd. . . . . .
Engineering & Machine Works of
Canada, Ltd. . . . . .

F

Ferguson, H. S. 23
Ford, J. & Co.
Foundation Co., Ltd 22

G

Galt Knife Co., Ltd. 27
Garden City Paper Mills, Ltd. . . . 74
Geigy Co., Inc. 72
Goldie & McCulloch Co., Ltd. . . . 89
Goold, Shapley & Muir Co., Ltd. . .
Gottesman, M. & Co. 29
Graselli Chemical Co., Ltd., The . . 72
Graton & Knight Mfg Co., Ltd. . . .
Griswold & Co. 26
Gutta Percha & Rubber, Ltd. . . . .

H

Hamblet Machine Co. . . . . .
Hamilton Gear & Machine Co. . . . 87
Hamilton, Wm. Co. of Canada, Ltd.
Hans Renold of Canada, Ltd. . . . .
Hardy, George F. 22
Harland Engineering Co. of Canada,
Limited 1
Hay Knife Co., Ltd., Peter . . . .
Hendrick Mfg. Co. 69
Hercules Powder Co. 21
Holliday, L. B. & Co., Ltd. 78
Huestis, A. M. 86
Hydraulic Machinery Co., Ltd. . . . 2

I

Ideal Patents Corporation 20
Industrial Engineering Co., Ltd. . .
International Business Machines
Co., Ltd. 23
International Pulp Stone Co., The 27
Interlake Tissue Mills, Ltd. . . . .

J

Jenkins Brothers, Ltd. 21
Jenssen Co., G. D. 23
Johnson Wire Works, Ltd., The . . 30
Jones & Glassco, Regd. 80

K

Kalbfleisch Corporation, The 86
Kander Paper Stock Co., Ltd., The 24
Kenwood Mills, Ltd. 13
Kimball, Herbert S. 22
Kingsbury Machine Works . . . . .
Klipstein & Co., Ltd. A. 16

L

Lacey, James D. & Co. . . . . .
Largeof Trading Co. 63
Langston, Samuel M. Co. 27
Laurentide Co., Ltd. 84
Lawrence Machine Co. 72
Lombard & Co. Inc. 27

M

Management Engineering & Development Co., The 23
Mead, Patton & Co., Ltd. . . . . .
McArthur, Irwin, Ltd 18
McAvity T. & Co Ltd. 32
McKinnon Steel Co., Ltd. 22
Mills Works & Machinery, Ltd. . . . 80
Miramichi Quarry Co., Ltd., The . . 69
Montabone, J. A. F. 22
Montreal Locomotive Works, Ltd. . .
Morrison, J. L. Co. . . . . .

N

National Paper Stock Co., The 24
Niagara Wire Weaving Co., Ltd. The 74
Northern Crane Works, Ltd. . . . . .
Northern Electric Co., Ltd. . . . . .
Northern Foundry & Machine Co. . .
Norwood Engineering Co. of Canada,
Limited 26

O

Oliver Continuous Filter Co. . . . . .
Ontario Wind Engine & Pump Co,
Limited . . . . . .

P

Pacific Coast Pipe Co., Ltd. . . . . .
Patton, Mead & Co., Inc. . . . . .
Peacock Brothers, Ltd. . . . . .
Penmans Limited 20
Pollack Bros. & Co., Ltd. . . . . .
Port Arthur Shipbuilding Co., Ltd. 29
Porritts & Spencer Co., Ltd. . . . . .
Price Bros. & Co., Ltd. 10
Price & Pierce, Ltd. 83
Provincial Paper Mills, Ltd. . . . .
Pusey & Jones Co., The 16
Pulp & Paper Trading Co., Ltd. . .
Pulp & Paper Mill Accessories, Ltd. 86

Q

Quarries, C. & M Co. 22

R

Reed, Geo. W. & Co., Ltd . . . . . .
Rolph, Darwen & Pearce . . . . . .
Rolland Paper Co., Ltd. . . . . .
Ross Engineering of Canada Ltd. . . 27
Russell Brothers 19

S

Sadler & Haworth . . . . . .
Sewall, Jas. W. 22
Sherbrooke Machinery Co. 9
Smallwood Stone Co., The 24
Smallwood Low Stone Co., Ltd. . . 27
Smith Howard Paper Mills, Ltd. . . 78
Spanish River Pulp & Paper Mills,
Limited 86
Steel Trough & Machine Co., Ltd. . . 72
Sterling Electrical Co., ... 22
Stinson-Reeb Builders' Supply Co.,
Limited . . . . . .
Stebbins Engineering & Mfg. Co. . . 18
St. Maurice Paper Co., Ltd. . . . . .
Sturtevant Co. of Canada, Ltd. . . . 87

T

Tallman, Brass & Metal, Ltd. 74
Taylor, J. A. . . . . .
Taylor, H. S., Ltd. 21
TexasGulfSulphur Co. . . . . .
Ticonderoga Machine Works . . . .
Tippett & Co., Ltd. 6
Tyler, W. S. Co., The 27
Trimbey Machine Works . . . . . .

U

Underfeed Stoker Co. of Can. Ltd.
Union Screen Plate Co. of Canada,
Limited 87
Union Sulphur Co., The 30
United Wire Works Ltd. 6

V

Vera Chemical Co. of Canada 72
Voorhees Rubber Mfg., Ltd. 26

W

Wallace, John H. & Co., Ltd. 22
Wardlaw, T. D. & Son 72
Walmsley, Charles & Co., Ltd. . . 14-15
Warren, Kenneth L. 22
Warwick Woollen Mills, Ltd. 88
Watford Engineering Works, Ltd. . . 4
Waterous Engine Works 90
Wayagamack Pulp and Paper Co.,
Limited 70-71
Weir, G. & J. (Canada), Ltd. . . . .
Westbye, P. P. 76
White, W. H. 88
Whyte, William 88
Wilson Patterson Co., Ltd. . . . . .
Wood Pulp Trading Co., Ltd. 65

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PATENTED

TAKES THE PAPER AUTOMATICALLY
THROUGH DRYERS

PASSES THE PAPER AT EXACT SPEED OF DRYERS
NO SHUT DOWNS DUE TO SPEARING
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SAVES BROKE PAPER
PREVENTS ACCIDENTS
NO MISSED ENDS

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APPLICABLE TO ALL KINDS AND
MAKES OF PAPER MACHINES

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Private Automatic Exchange



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The P. A. X. is the only rapid, easy and economical means of intercommunication between widely separated departmental heads of a business.

Business needs action. The turn of the dial gives action any time — all the time.

"A Pair of Wires and a Dial", telling of P. A. X. in operation is yours for the asking. Write our nearest House.

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LIMITED

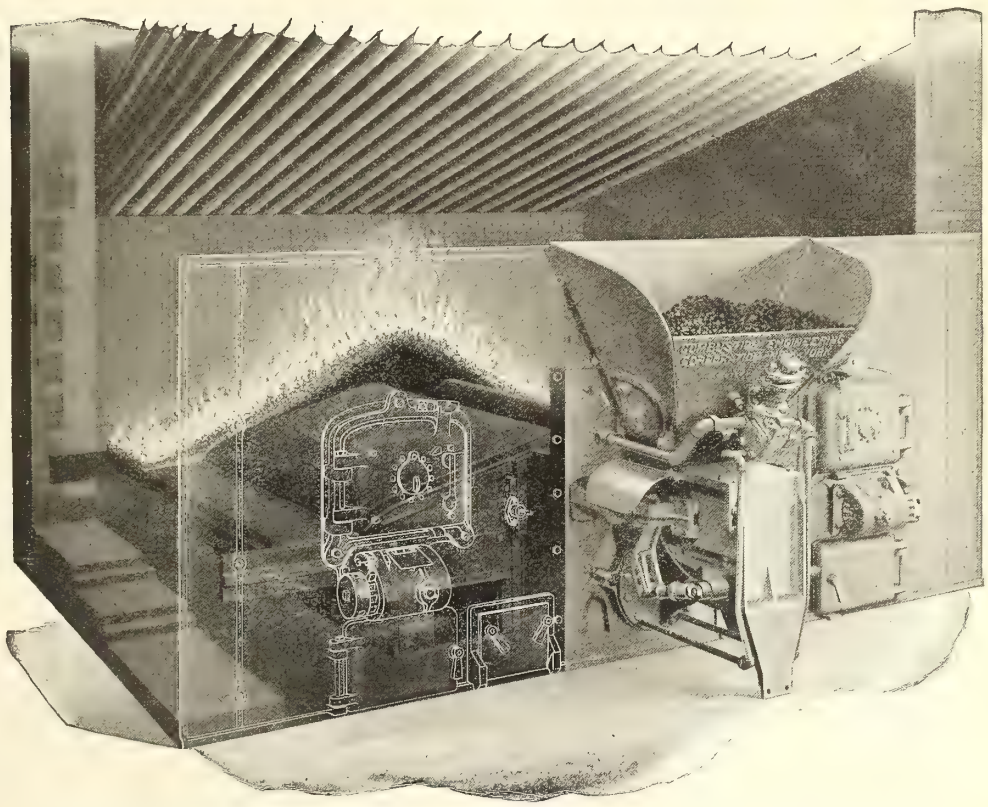
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Everything in the boiler room except the boilers.

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LIMITED

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MAIN OFFICE: TORONTO

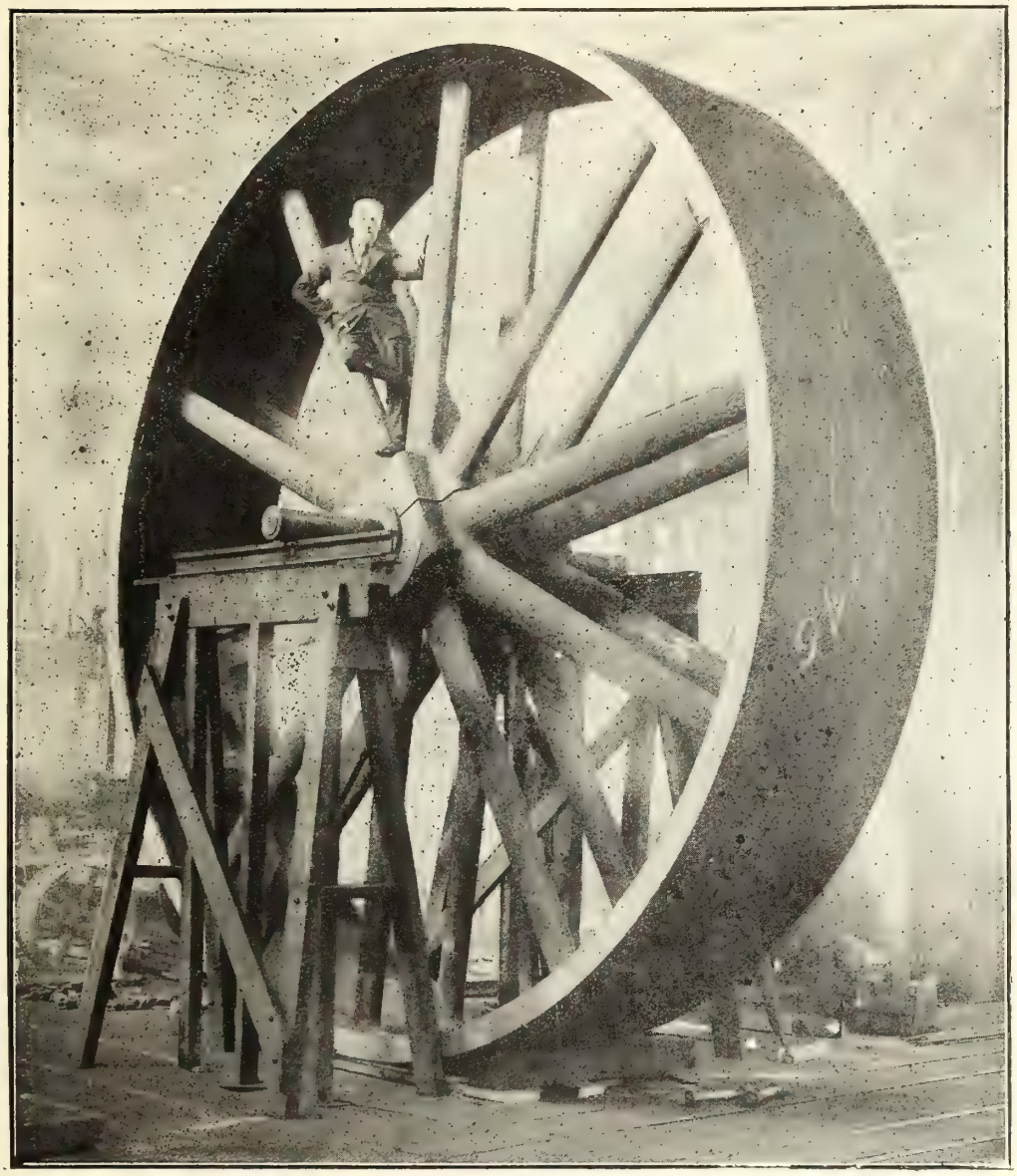
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Sales Offices - - Coast to Coast



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Its diameter is 216 in., its face 45 in., and its approximate weight 21 tons.

It was made to specifications for a big Saw Mill and was shipped on time.

We invite correspondence from mill superintendents who wish big work done in a big way by an organization whom they can rely upon to turn out work accurately, efficiently and on time.

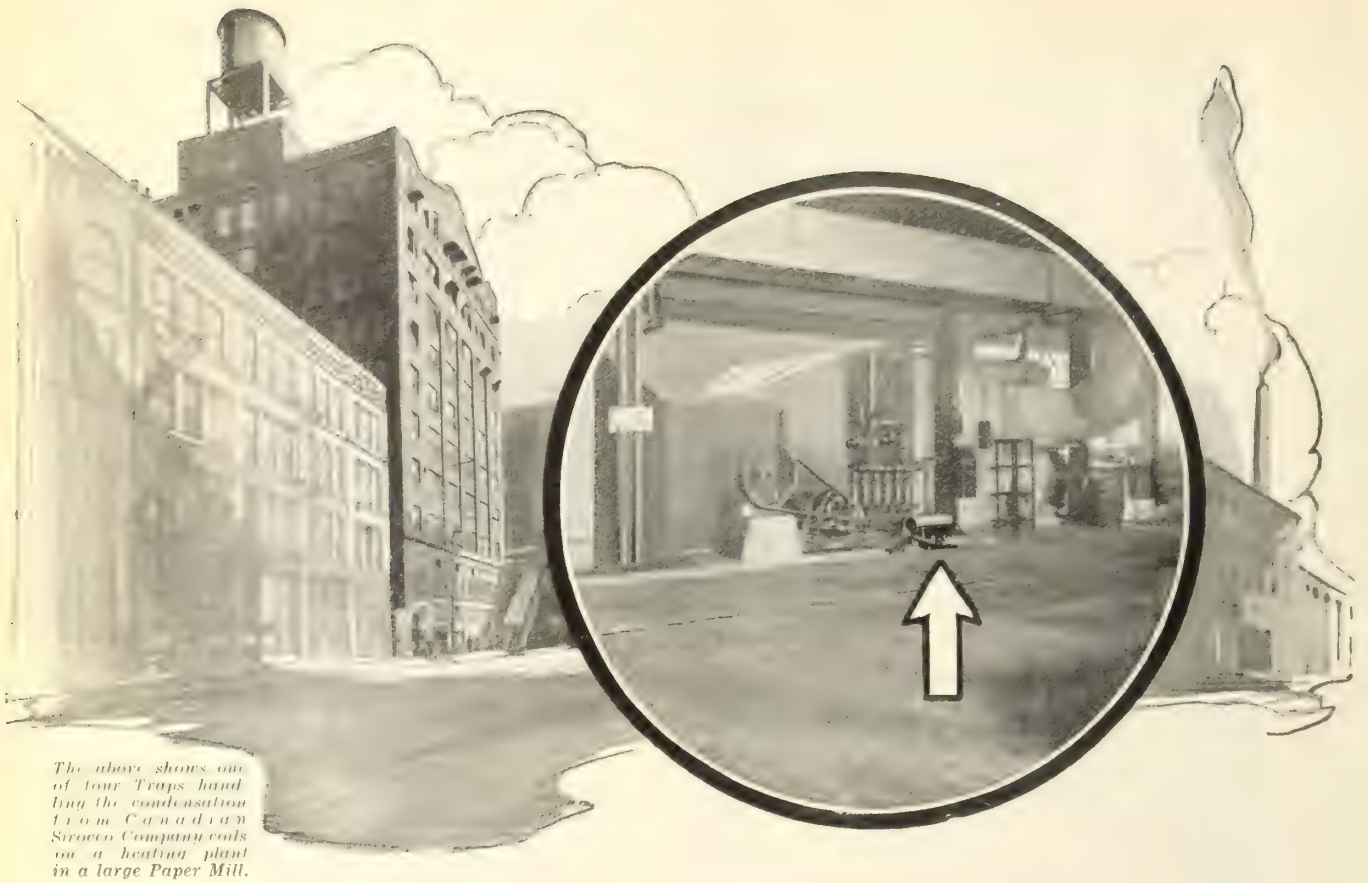
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Power Transmission Machinery

DODGE MANUFACTURING CO. OF CANADA, LIMITED

HEAD OFFICE & FACTORY — TORONTO
BRANCH WAREHOUSE — MONTREAL

DISTRIBUTORS: CHAPMAN DOUBLE BALL BEARINGS EX OUR STOCK



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Write for descriptive bulletins and let our engineers co-operate with you in solving your condensation problems.

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(306)

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BLOWERS · EXHAUSTERS · VENTILATING FANS · AIR WASHERS · ENGINES

FOR HEATING, VENTILATING, DRYING, AIR CONDITIONING, MECHANICAL DRAFT

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(KNOT SCREEN)

For all kinds of Stock. Will remove uncooked knots without breaking them.

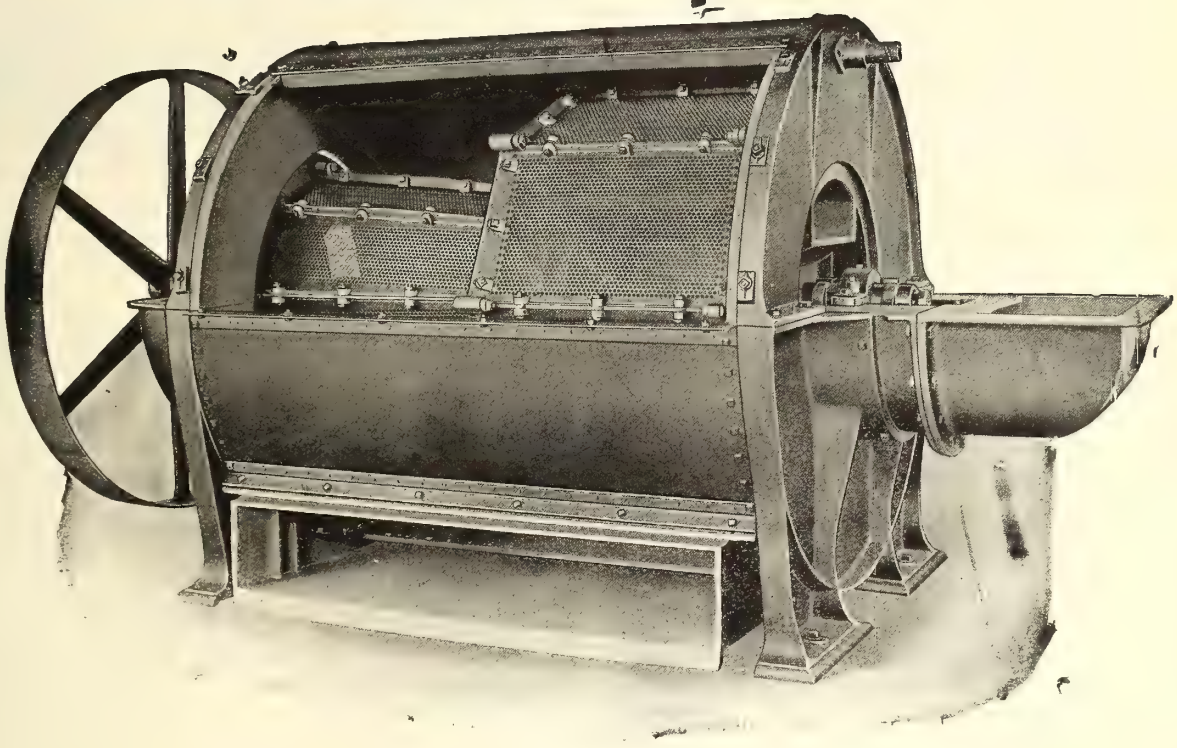
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Single Belt Drive, No Packings,
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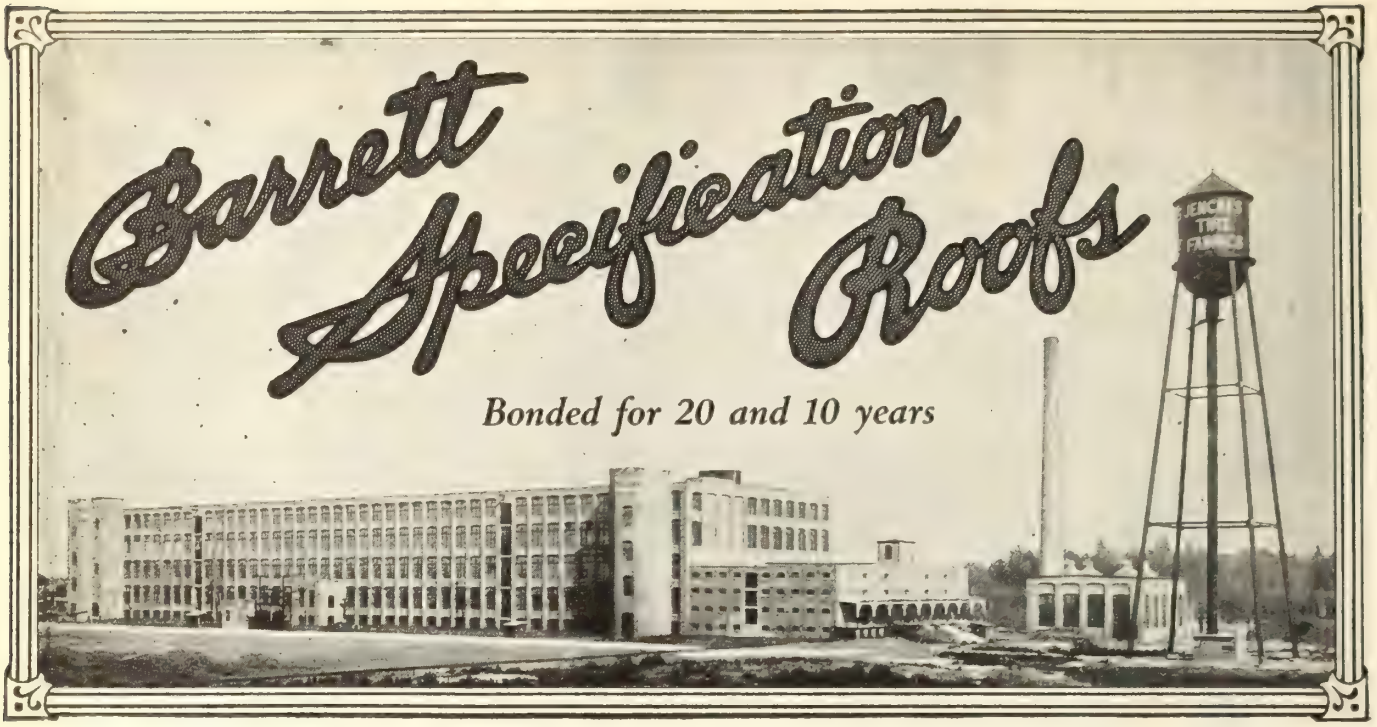
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Improves Quality
Very Large Capacity
Power Saved

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Sherbrooke Machinery Company Limited

SHERBROOKE - QUEBEC



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WINNIPEG VANCOUVER HALIFAX, N. S.

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MONTREAL TORONTO ST. JOHN, N. B.

Established 1870

AYERS LIMITED

LACHUTE MILLS P.Q.

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Largest Plant of the kind in the Dominion, ranking amongst the most modern FELT FACTORIES in the World.

Capacity easily taking care of very important Canadian customers' requirements — and shipments to the other Paper Making Countries.

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"FELTS
WASHED
WITHOUT
SHUTTING DOWN
PAPER MACHINES"

The Patented "Ayers" **FELT WASHER** attains this ideal for which paper makers have long been striving. By the means of this device, the work of cleaning and washing the Felts is done without stoppage of the machinery and, in the case of news print or similar paper, without breaking or crushing the sheet.

PATENTED IN U.S.A., CANADA AND EUROPEAN COUNTRIES.
PATENTS APPLIED FOR IN JAPAN AND MEXICO.

Already in operation in some of the largest Paper Mills where it is recognized as indispensable and a great money saver.

Privilege to install this FELT WASHER readily granted by AYERS LIMITED to all its customers on most reasonable terms.

Full particulars given upon application.

A special Felt has been designed for use in conjunction with this Felt Washer wherever it is in operation.

These two essential factors — "AYERS FELTS and FELT WASHER" — in perfect team work — make for efficiency, economy and genuine satisfaction in the Paper Mill.

NORTHERN ACID BRONZE





MADE IN CANADA





Product that has stood the test of time in hard Continuous service in Sulphide and other mills. It is made of virgin metals of proven specifications.

Don't Experiment but insist on material that has been tested. When you buy a Northern Product you do so with the assurance that it has been tested before it leaves the factory. The above cut shows one of our acid pumps under test.

The Northern Foundry and Machine Co., Ltd.

Factory: Sault Ste Marie, Ont.

Sales and Engineering dept. 348 Bay St., Toronto

Eastern Representative: The Watt Machinery 344 St. James St., Montreal

B. C. Representative John W. Thompson & Co., Ltd., 510 Hasting St., West. Vancouver

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WOOL PRODUCTS

Cost should be measured not by price but by performance

Recent demonstrations of Kenwood Felt efficiency in removal of water, in volume of production and in freedom from trouble have created new standards for judging costs.

THERE IS A KENWOOD FELT PARTICULARLY ADAPTED TO YOUR REQUIREMENTS

KENWOOD MILLS LTD.,

Arnprior, Ont.

KENWOOD FELTS --- KENWOOD SEAMLESS FELTS --- KENWOOD TAN JACKETS

Charles Walm

Telephone — 499 BURY.
Telegrams — "PUMPS BURY."



Wet End of 232 in. Fourdrinier Machine at Abitibi Power & Paper Co., Iroquois Falls, Ont.
Which has given an output as large as 90 tons in 24 hours.

HIGH SPEED

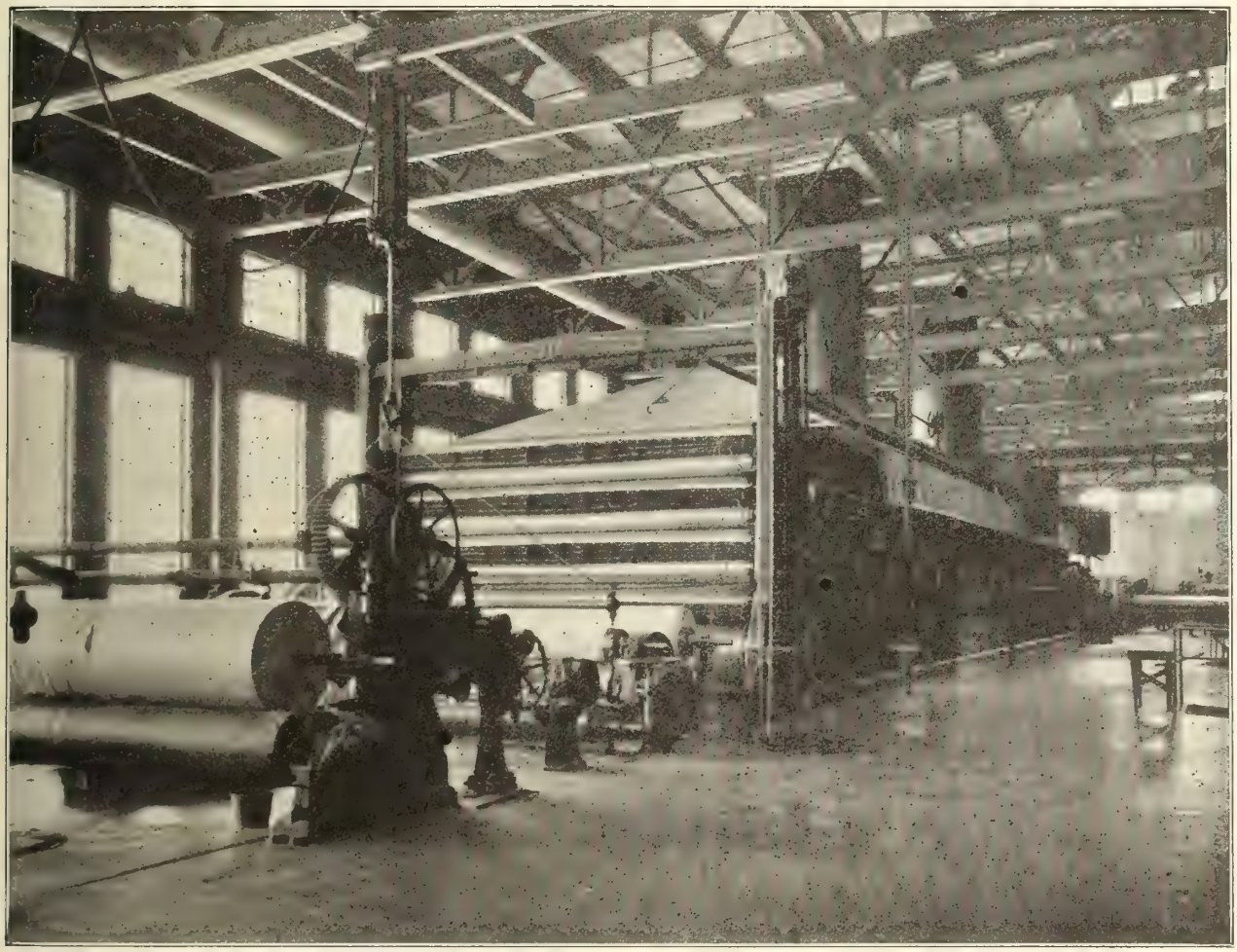
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Western U. S. A. }
JAMIESON ENGINEERING CO.
London Building, Vancouver, B.C.

Paper Maker

ATLAS WORKS,

sley & Co. Ltd.

Cables — PUMPS BURY, ENGLAND.
Codes — 5th Edition, A B.C. Western Union.



Calenders, Reels, and Winder, on the Widest Machine in the World. There are two of these monsters at Iroquois Falls, Ont.

PAPER MACHINES

Engineers

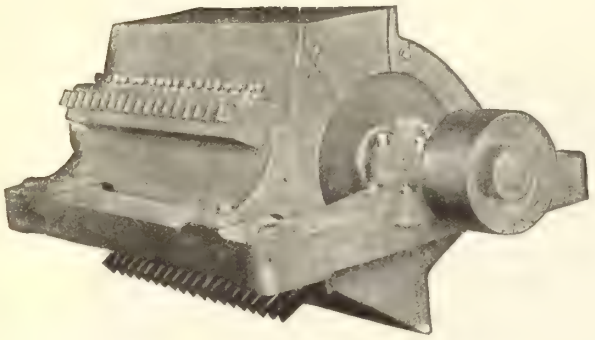
BURY, LANCASHIRE.

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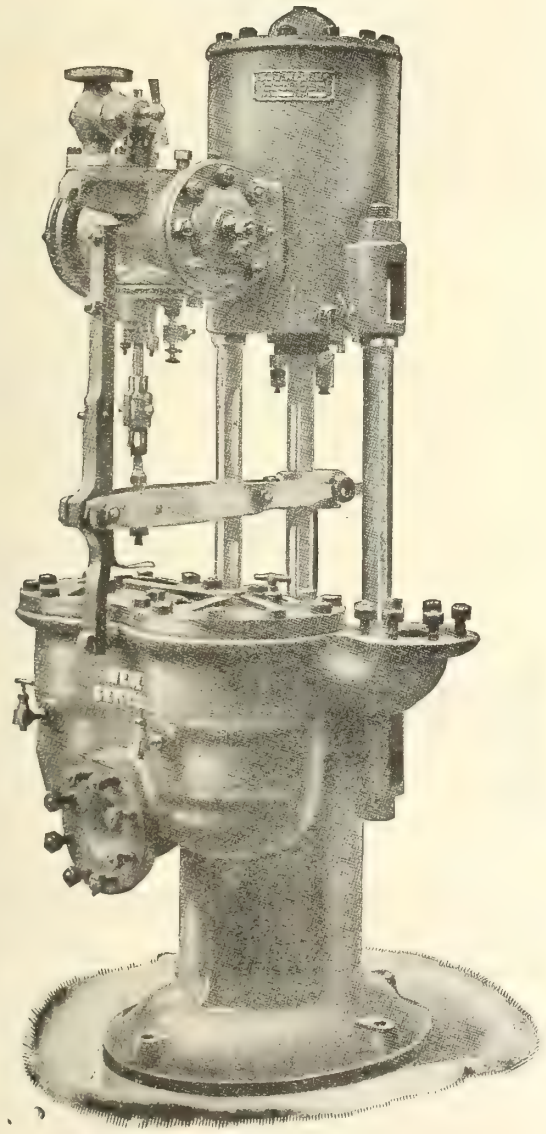
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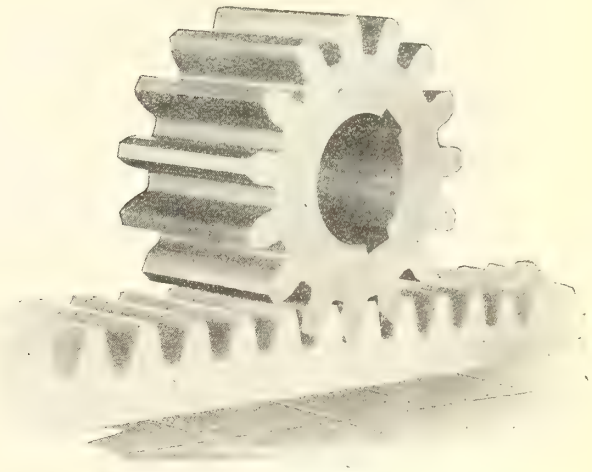
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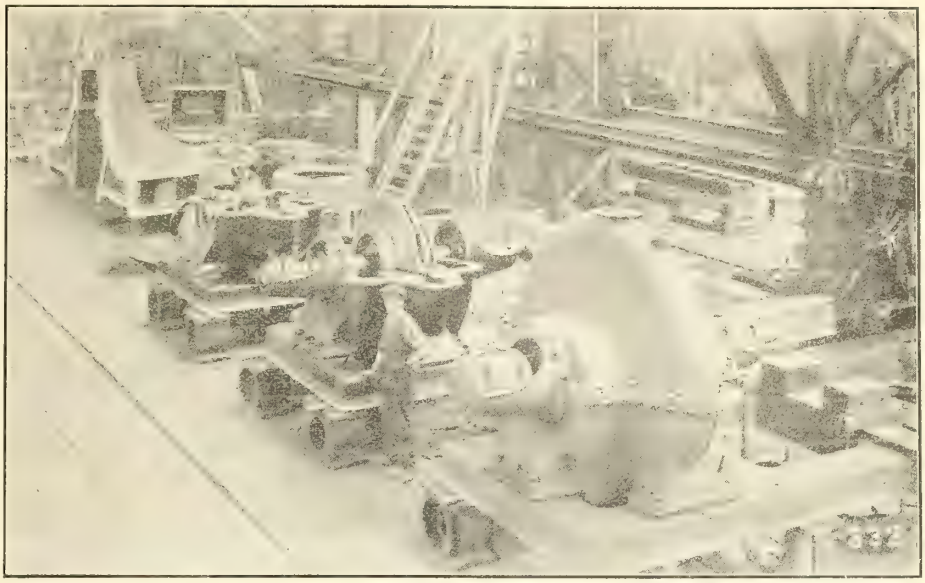
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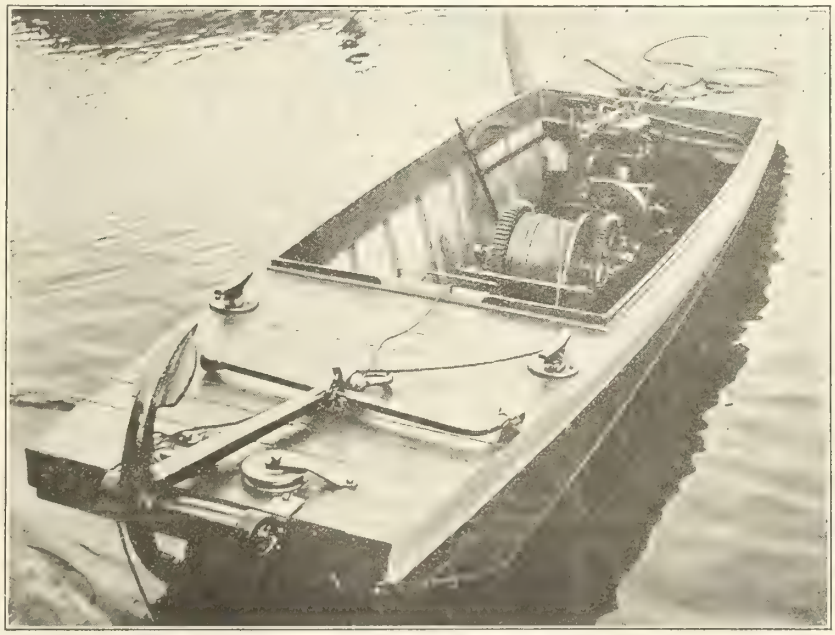
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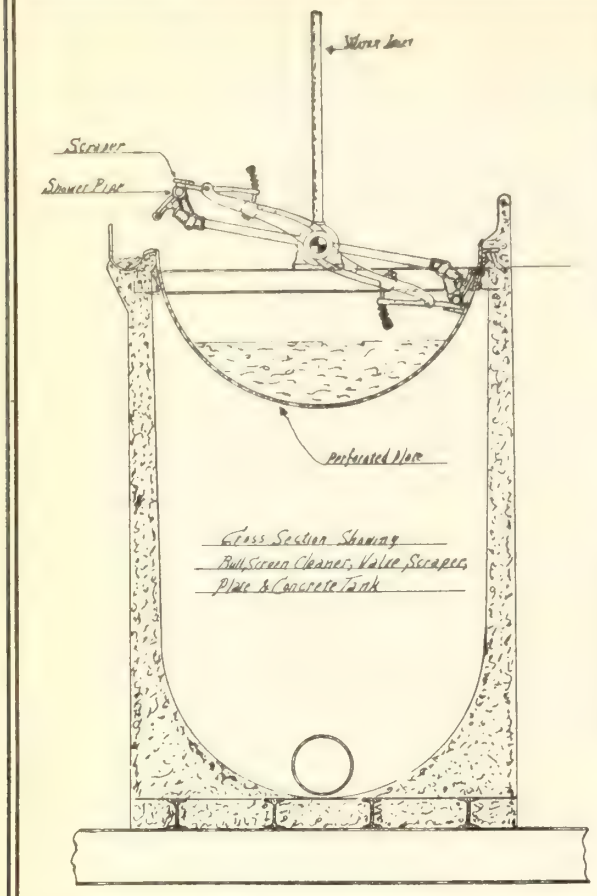


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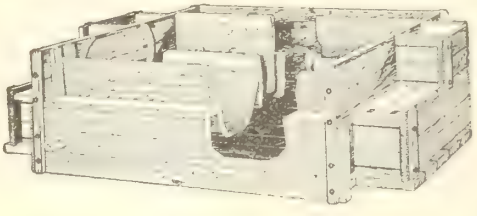
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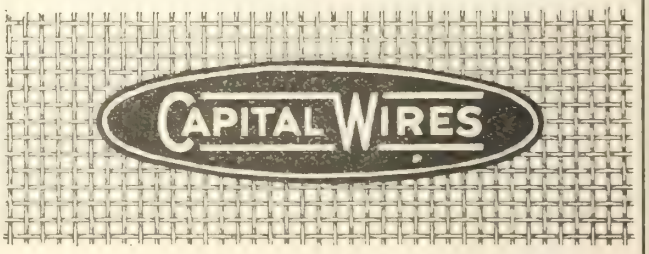
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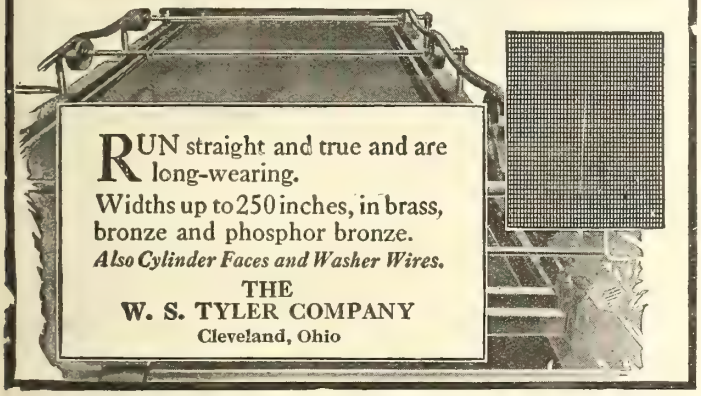
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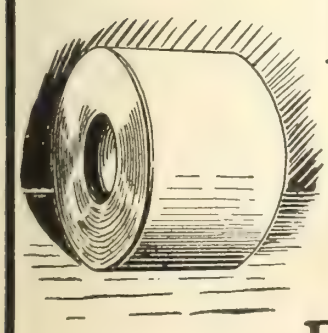




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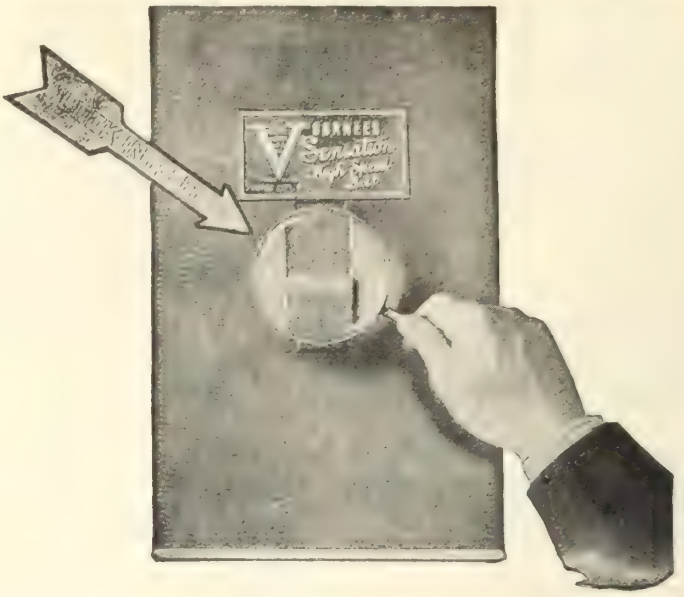
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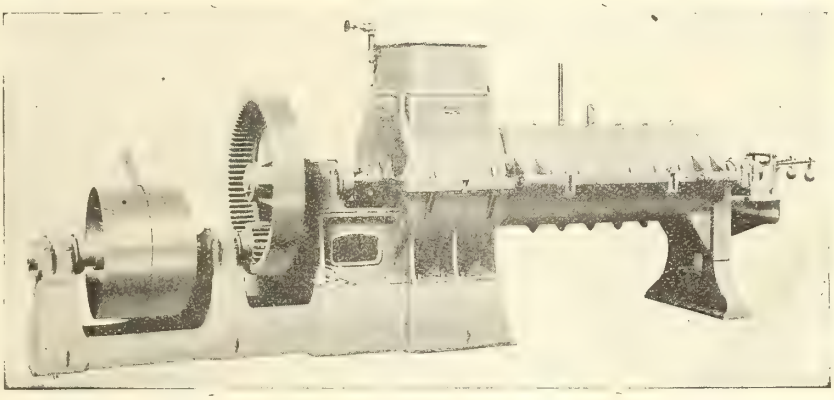
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VOL. XXI. GARDENVALE, QUE., June 21, 1923 No. 25

TABLE OF CONTENTS

Editorial:

Action at last 617
Technical Section service 617
Paper Club in danger 618

Special Articles:

Problems of sulphite pulp Manufacture . . 619
Flow meters as applied to the paper industry 621
The influence of sulphur in the cooking of Jackpine by the sulphate process 623
The removal of electricity from paper and fabrics 627
Will foremen study 629

Miscellaneous Information:

Positive filling 620
Operating a paper machine 620
Do's for pedestrians 622
Don't fear strange ideas 623
Educating the workers 628
A new type of burr 632
Review of recent literature 634
Sodium silicate 637
Nine years of accident prevention work . . 638
Wise men and their money 642
Who says China is backward 643

News of the Industry:

Pulpwood exports increase 622
Pulp and paper news 631
Charge dumping kraft in U. S. 632
Making pulp board in Edmonton 633
New Brunswick news 633
Contract awarded for Newfoundland dam 633
United States notes 636
Anglo-Canadian pulp trade growing 637
Salesmen will grow and grow 638

The Markets:

Canadian trade conditions 639
New York markets 640

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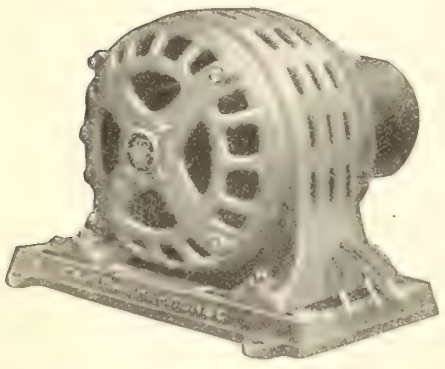
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Problems of Sulphite Pulp Manufacture

BY ARTHUR S. M. KLEIN, Dr. Ing.

Of the chemical pulps in use four-fifths is produced by the sulphite process of manufacture.

As to the chemical constitution of cellulose or of wood itself we are without exact knowledge. As Willstaedter put it, we know that the cellulose molecule is composed of glucose molecules, but how these glucose molecules are combined is as yet unknown.

The trouble with all chemists who have done research work on cellulose and lignin as well as on the chemical constitution of wood is that they have approached the problems as chemists only. Now if the chemist is not at the same time a physicist he will be unable to grasp the subject in its entirety. M. W. Bray and T. M. Andrews of the Forest Products Laboratory of the U. S. Forest Service have demonstrated recently what was known empirically that pulps of the same chemical composition are not identical in their papermaking qualities. The excellent work pursued at the Madison, Wis., laboratory, has done much to clarify our views of what must be done to effect the production of a good sulphite pulp, how to obtain it of uniform quality and the means necessary to modify such a product in order to meet the demands of papermakers.

It is a remarkable fact and quite true that although we have been making soda pulp for upwards of seventy years and sulphite pulp for nearly fifty years, we know little more about the chemistry of the pulp making processes than we did in the days when these processes were worked in small mills making something like one or two tons a day.

It is to be hoped that Mr. John D. Rue who is now in charge of the pulp and paper section of the U. S. Forest Products Laboratory at Madison, Wis., will carry forward the work of the laboratory and produce new and more interesting facts. In 1905 when I organized the Cellulose and Paper Chemists' Association, I advocated the erection of a special laboratory for research work in pulp and paper. It does not seem likely that European laboratories will be in a position for some time yet to carry on such researches. In the case of British papermakers interest is lacking in pulp making processes, and financial considerations now hinder research in Germany. The Swedes have closed their "Pappersmassekontoret" and the Norwegians have no special laboratory. Finland has a central laboratory, but the work done there is confined to every-day problems. There is not much interest taken in wood and cellulose chemistry in France and Italy as big forests do not exist in these countries and they lack special laboratories. I understand that laboratory work has been suspended in Canada, so that the United States may take pride in possessing the best laboratory for pulp and paper research that exists anywhere in the world.

It is manifestly up to Americans to grasp their opportunity. I may here remind the staff of the pulp and paper laboratory at Madison of Herzog's method of using Roentgen rays for determining the molecular constitution of cellulose. If they decide to combine chemical and physical methods in their research work they will achieve fame and accomplish results that will benefit the whole pulp industry.

Of the problems of practical interest to manufacturers of sulphite pulp, many are quite old. Take the question of preliminary steaming of the wood before digestion with the sulphite liquor. This method was invented before the sulphite process came into use, an American patent (No. 63044) having been issued to J. R. Haskell on March 19, 1867. The influence of the composition of cooking liquor on the time needed for impregnating the chips has been shown by Dr. B. Johnsen. In this connection there is an old patent mentioned by Schubert and also in the later edition of his book by Knosel, according to which Archbold, of Oswego, N. Y., filled the digester with chips and milk of lime and then introduced SO_2 gas, the idea being to produce in this way calcium bisulphite in the nascent state. This should make for universal efficiency and might spare us all the expense of a separate acid making plant, provided it would work well in practice. I wonder if there is somewhere among us a genius capable of putting the idea into practical operation.

Another question of no mean age or importance has to do with the use of regenerated acids. None of the chemists who have worked on the theory of the pulp cooking process has yet succeeded in giving a satisfactory explanation of the fact that we are able to cook faster and to get a more uniform pulp with the use of cooking lyes containing some regenerated acids than when using only fresh acid liquor.

If we compare the action of two cooking acids on the same quality of wood, both lyes containing the same percentage of total, combined and free SO_2, but on coming directly from the acid making tower and the other containing a proportion of regenerated acid, it is noticeable that in the digester containing regenerated acid, the cooking time is shortened and the quality of pulp is not adversely affected by the quickened cooking. The origin of the acids can be distinguished by smell and color. The odor of regenerated acid is sharper, it stings more, and it has a greenish color, whereas the acid coming directly from the tower is a colorless, transparent fluid. Regenerated acids all contain organic matter, formic acid, etc., but we do not know what part these organic compounds play in the cooking process. We can guess at their influence, the result is plain to be seen, but the reactions can not be stated with scientific accuracy.

It is the dream of all sulphite pulp manufacturers having trouble with the linings of digesters, such as was common twenty years ago, to evolve a process in which cheap chemicals could be used as in the sulphite process, but with neutral or alkaline solutions. I know of no process which fulfills this ideal. In like manner, I know of no process capable of producing stuff similar to the mixture of chemical and mechanical pulps used in newsprint manufacture. The desideratum is an economical process for the manufacture of a sort of half-cellulose, so as not to disintegrate the wood quite so completely as is effected by either the sulphite, soda or the sulphate process. The production of kraft by the sulphate or soda process approaches the desired end, but what is actually needed is a white pulp that can be made directly into newsprint.

Think what it would mean if all the big newsprint mills could be spared the grinding and cooking of pulpwood, with all the necessary equipment, and be enabled to produce a satisfactory pulp by a single process, instead of grinding and cooking separately. A move in this direc-

tion was effected with the introduction of the high pressure grinding process in which less water is used and a higher temperature is maintained as a consequence. In this process probably by a hydrolytic action, the fiber obtained is longer and more elastic than that produced by the ordinary grinding process, it more nearly approaches the type of fiber denied, but it is still necessary to incorporate a certain proportion of sulphite pulp with it on the manufacture of newsprint paper, and thus it does not meet our requirements.

In regard to the utilization of spent sulphite liquors little progress has been made. The recovery of alcohol by fermentation and distillation is not profitable under normal conditions, though two mills in Germany are engaged in it because they have access to cheap coal. Alcohol plants in Sweden and the other Scandinavian countries have been closed down, because the alcohol produced could not be sold at a profit.

Other processes for the production of glue, papermakers' size, organic compounds, and many other materials, out of waste sulphite liquors, have failed to give profitable results on a commercial scale. As a rule it is more economical to get rid of the spent liquor by discharging them well diluted into watercourses.

It must be confessed that in regard to the utilization of waste sulphite liquor we are not much ahead of the situation that existed when the first big sulphite pulp mill was started. In a chemical sense we have made little progress to a better understanding of the process of pulp manufacture or to increased knowledge of recovery processes. Our development has been more marked along the line of acid manufacture, where we have an absolute control, and in the saving of labor and fuel. It is true that great progress has been made in bleaching methods, but a discussion of this subject will be reserved for another paper.

POSITIVE FILLING

If our teeth could be filled when necessary as simply, quickly and satisfactorily as a Jordan engine can be equipped with a new filling of the type introduced by Bahr Brothers Manufacturing Company, most of us would be saved a lot of time in the dentist's chair and a good deal of discomfort and inconvenience. The success of the positive type of filling for Jordan engines which, we believe, was first introduced by this concern, is shown by the recent application of the same principle to the manufacture of a new type of beater bar equipment which is cast in one cylinder. This, of course, does not detract from the value of the Jordan filling, but is a compliment to the inventors and development of that important innovation in paper making machinery.

The Canadian trade for these fillings has been growing steadily so that it became advisable to have a Canadian house representing this concern, and the William Hamilton Company of Peterboro, Ontario have been appointed as the agents of Bahr Brothers for the manufacturing and distribution of this type of filling. A very interesting set of photographs is in the possession of the Pulp and Paper Magazine which shows a Jordan completely relined in just six minutes, as indicated by a clock whose face is photographed along with the successive steps in the replacement of the filling.

Those who prefer the service of sin must be satisfied with the wages of sin.

OPERATING A PAPER MACHINE

The following is a list of points which should be carefully remembered and applied in order to secure the proper operation of the papermaking machine:—

1. The paper stuff should be well mixed in the stuff boxes and vats.
2. The pulp should travel downward in the paper beaters mixed with a regularly calibrated amount of water.
3. There should be proper facilities for the rapid emptying of the paper stuff from one chest to the other.
4. The waste liquors, that are added, should be controlled so that a constant regular flow of the same is secured by means of constant level feed tanks.
5. The beating in the refining engines should be at a minimum.
6. Proper control should be exerted on the method of allowing the paper stuff to enter the head end of the papermaking machine and to distribute itself in the feed box.
7. The devices, which control the agitation of the screen, should admit of easy manipulation.
8. The proper regulation of the different parts of the Fourdrinier portion of the machine so that a sufficient accumulation of paper stuff is found on the screen.
9. The proper location of the one more drain rolls.
10. Thorough washing of the woolen blanket.
11. The little known practice of flooding the paper web as it enters between the cloth press rolls, which often avoids the woolen blanket crushing the paper web.
12. The use of fulled woolen blankets in the place of woven woolen blankets on the secondary moist presses.

The condition of the couch rolls is of great importance not only with respect to the travel of the felts, the drying of the paper, but also in the avoidance of breaks in the paper during the drying process. It has been stated that the percentage of breaks in the dry paper during the process of drying, as it passes between the surfacing and calendering rolls and finally as it is being rolled up, amounts to 2 to 3 per cent. of the total production of finished or semi-finished paper. In order to reduce these losses and at the same time lessen the work of the operators, who have to watch this part of the papermaking process, the author has invented and installed on a new machine a paper web carrier, which has been successful in diminishing these losses to the extent of 20 to 30 per cent.

The average percentage of breaks in the manufacture of thin papers is 8 to 10 per cent. of the weight of finished saleable product.—M. Arnould in *Le Papier*.

ADDITION TO CORNWALL PLANT

At the annual banquet of the Cornwall board of Trade Mr. C. Howard Smith, president of the Howard Smith Paper Mills, Limited, made an announcement that he had just asked for tenders for a big addition to the already large plant of the Howard Smith Paper Mills plant at Cornwall and that tenders for other work here would be called for shortly, the whole to involve the expenditure of hundreds of thousands of dollars. Details will be given in next issue.

Flow Meters As Applied To The Paper Industry

BY JAMES MESS

One often hears the expression, "Ton of coal per ton of paper," or "How much coal do you use per ton of paper?" We are all striving for the reduction of the former and the increased production of the latter. How can the reduction of the former be best attained?

The boiler plant is most assuredly a "Steam Factory," and the final cost of producing steam is just as important as the cost of paper production itself. Instead of the comparison, "Fuel per ton of paper," should it not be split in parts, "Cost per thousand pounds of steam—Thousand pounds of steam per ton of paper"?

There is only one practical way, to date, of obtaining these relations, namely *Flow Metering.*

The flow metering principle is applied to the measurement of steam, water, or other fluids in large quantities, and consists of producing a differential pressure which varies in a definite and known relation to the rate of flow, then translating this pressure difference into terms of volume or weight, according to requirements. As steam is the largest "fluid cost" in the paper industry, our remarks will perforce deal with it most completely.

A Flow Meter, as we know it, can be divided into two parts. First: the Differential Medium which creates this differential pressure; Second: the Meter proper which measures this pressure difference. A concrete example might be taken of a main steam line supplying steam to the mill. A suitable location is chosen for the differential medium which may be an orifice plate, a Pitot tube, or a Venturi section, as conditions require. If an orifice plate is used, suitable flanges have to be provided. With a Pitot tube, it is necessary to tap the pipe only for its housing. With a Venturi section, the installation is somewhat more complicated and expensive, in that a length of pipe, equal to the specially designed Venturi section has to be removed and replaced by the section proper. The orifice plate is perhaps more commonly used, as it has greater capacity for minimum and maximum flows and differs from the Venturi section in that the approach of the flow is fully contracted by the sharp edges of the plate. This results in an even amount of friction loss, and therefore the effect of the orifice as a means of obtaining the differential pressure is the same for all orifices of its kind.

The Orifice Plate consists of a monel metal disc, varying in thickness according to its size, but of an average of 1-16 inch with a circular opening. This disc is inserted between two flanges in the line forming a contracted area in the stream of flow. On each side of the orifice plate, at specified distances, reservoir or condenser fittings are installed, from which short lengths of small diameter piping lead to the meter proper. These reservoirs consist of cylindrical containers placed in horizontal position with reference to the center of the pipe, and ensure an equal head on the connections of the meter in the case of condensible fluids.

The meters themselves are of many types and designs, and cannot be dealt with in specific detail in this article. The following points however, might be considered when the purchase of flow meters is contemplated.

Accuracy. If a flow meter reads within two percent high or low, through a reasonable range, it should be considered accurate. Continued accuracy is best obtained from equipment of simple design,—as few moving parts as possible,—where adjustment is obtained in a simple manner,—where the totalizing instruments operate independently of the indicating and recording features. All flow meters measure units only, and care has to be taken that the correct factors are used for transcribing these units into pounds, cubic feet, gallons, etc.

Durability. A meter should be of rugged construction, the operating parts completely enclosed and should after adjustment, remain in adjustment, for an almost indefinite period.

Versatility. Each instrument has, to all intents and purposes, to be specially calibrated for the conditions for which it is required. As time goes on, these original conditions may vary. A meter should be so adapted that recalibration can be made and the instrument adapted to new conditions with minimum cost and trouble.

Visibility. Indicating features of the meter should be very easily seen at considerable distance, so that where improved operation is necessary, the operator has everything to advantage in a perfect instantaneous indication of the flow through the line in which he is interested. It is often of extreme advantage to install on a line, for example, steam line to digester, extra indicating instruments, one in the boiler house for the assistance of the firemen, and the other in the digester room for the benefit of the cook and his helpers.

Maintenance. Modern design has brought the maintenance cost of the average flow metering equipment to a minimum. It must be understood, however, that as even an ordinary clock requires winding, a flow meter installation must receive some attention and consideration, such as avoiding leaks in the system, etc., and regular inspection of equipment.

Centralized Control. In modern power plant practice where centralized control is daily becoming more important, factory instruments which operate accurately at any desired distance from the metered line, are of decisive value.

Flow metering in the paper mill business as well as in many other industries, is synonymous with power plant cost accounting.

Power Plant Cost Accounting is of vital interest to two distinct branches. One branch comprises executives and accountants who have extensive training in general methods of cost accounting, but who are interested in power plant practice only indirectly and purely from a profit and loss point of view. The other branch embraces engineers and operating men who are familiar with power plant operation but who have not always given attention to the systematic recording of factory costs.

Steam Generation. The first step is to determine the cost per thousand pounds of steam generated. To accomplish this, certain quantities must be definitely obtained, that is, the amount of coal burned, water used, total amount of steam generated, etc. The cost schedule below might serve as a guide for co-relating these items and is divided into two classifications, "Operating Expense," and "Maintenance and Depreciation."

COST OF GENERATING STEAM

Operating Expenses—Generation:

1. Fuel used by steam plant (Coal, oil, refuse) .....M lbs.
2. Water used by steam plant.....cu. ft.
3. Cost of superintendence .....
4. Miscellaneous labor .....
5. Oil, grease and waste .....
6. Supplies .....
7. Electricity used by steam plant .....K. W. H.
8. Steam used by steam plant (auxiliaries) .....Lbs.

Total operating expenses .....(a)..

Maintenance and Depreciation—Generation:

9. Depreciation on power plant building and equipment used in producing steam .....
10. Repairs to power plant buildings .....
11. Miscellaneous equipment .....
12. Repairs to boilers and fittings .....
13. Repairs to power plant piping .....
14. Repairs to coal and ash handling apparatus .....
15. Repairs to miscellaneous equipment .....
16. Loose and hand tools .....

Total maintenance and depreciation .....(b)..

17 Total cost of generating steam (a and b) .....
18. Pounds of steam generated (total of Flow Meters).....
19. Steam cost per thousand pounds .....
20. Pounds of water evaporated per pound of coal (18 ÷ 1).

Very often the total steam generated can be metered on the main steam header. A suitable location for the differential medium is not always available in this line, however, in which case each individual boiler has to be metered, and these readings added together as a total. The duties of metering equipment, as far as steam generation is concerned, might be split in two parts, first, Operation, second, Cost Accounting. The successful operation being dependent on the correct interpretation of the readings from the indicating instruments principally; the cost accounting being dependent on the compilation of records for analysis for improved operation. Even should a suitable location in the main steam line be available, and the total steam generated measured in this manner, it is of the utmost importance that where the consumption of coal merits the initial expenditure, that a meter should be installed on each boiler, so that the engineer can synchronize each boiler and divide the load intelligently, tell when each boiler is operating at the best efficiency, etc, etc.

Most engineers today keep carefully the log sheet of their operations, but owing to inadequate steam measuring apparatus, are unable to give guaranteed improvements and results and place with the management definite cost figures. Many executives today regard the boiler plant as a "necessary evil." When questioned they admit their opinion is based on the fact that they are not in a position to criticize the operation of their boiler plant, and therefore depend on the engineer for its operation and do not feel inclined to spend any more money than is absolutely necessary to keep the wheels going round. Cannot complete supervision of this Department be controlled by installing measuring apparatus and getting a final cost per thousand pounds of steam? It will not be a question of why you burn so much coal, but why does it cost you twenty five cents more per thousand pounds of steam, than it costs the engineer at another plant.

Steam Distribution

The careful and economical distribution and use of steam is just as important as the generation of steam itself. In fact many companies that have cut their cost of producing steam to a minimum are, by wasteful distribution, losing a large part of the savings thus effected. Another equally important reason for keeping a record of steam distribution is found in the mechanical necessity for accurately apportioning the steam charges to the various departments. Unless this is done, it is obviously necessary to guess at the amount of steam used, which naturally results in one Department being unjustly penalized, while another derives an unfair benefit. Metering of steam and co-relating the results is the solution to this problem.

It is perhaps unwise to attempt to treat such a comprehensive subject as Flow meters as applied to the Paper Industry in such a short article, so the writer has been constrained to limit himself to merely touching the high spots, with the object in view of causing the users of such equipment "furiously to think."

PULPWOOD EXPORT INCREASE

Every month of the current year, for which returns are available, shows an increase over the corresponding month of last year in volume of unmanufactured pulpwood shipped from Canada to the United States. Figures for the first four months of the year disclose an increase of approximately 30 per cent. over last year, as follows:—

	1922 Cords	1923 Cords
January	66,094	133,328
February	98,429	99,830
March	96,998	113,493
April	49,076	74,438
Total	310,597	421,089

The increase for May will be greater, according to indications.

The value of the four months' exports was $3,695,626 this year, against $3,125,901 in 1922.

The forests which have sustained enormous losses from fires during the early part of the summer are, therefore, being still further depleted by the increased activities of the wood exporters.

An investigation would reveal that only a fraction of the exported pulpwood is taken from lands in the process of clearing them for settlement by bona fide farmers. The bulk of it is from lands owned or controlled solely on account of their pulpwood yielding value and which, when once denuded of trees, are abandoned.

DO'S FOR PEDESTRIANS

Act normally when a vehicle approaches you.

Trying to dodge confuses the driver, and makes him more liable to hit you.

Cross the street at the cross walk.

If inclined to be absent-minded wake up when crossing a street, and keep out of the hospital.

Wait until a car stops before getting on or off.

Give a driver sufficient space in which to pass you, remember you cannot tell what he is going to do.

Be aware of traffic dangers, familiarity and contempt of them invites accidents.

Remember Haste, Recklessness, Thoughtlessness and Carelessness, cause most accidents.

Do as you would be done by.

The Influence of Sulphur in the Cooking of Jack Pine by the Sulphate Process

By SIDNEY D. WELLS[1]

Introduction

In the first[2] of a series of papers on the chemistry of the alkaline processes for pulping wood it was shown in what way the chemical composition of the pulps and of the cooking liquors and the bleaching qualities and paper making qualities of the pulps were affected by the length of the cooking operation. The work has been extended to the consideration of sulphate cooking and the investigation of the first series of cooks recently completed.

Experimental Procedure

In the series under consideration the cooking conditions were as near as possible the same as those in the soda series referred to except for the addition of sulphur. These conditions were as follows:

1.—Charge of chips 100 lbs. bone dry weight.
2.—Caustic soda 20 lbs.
3.—Volume of cooking liquor at beginning of cook—20 gallons.
4.—Time in reaching maximum temperature — 1 hour.
5.—Maximum temperature 170 deg. C. corresponding to a steam pressure of 100 lbs. per sq. in. above atmospheric pressure.
6.—The chips were all thoroughly impregnated with caustic soda solution using the same methods outlined in the soda series.
7.—In order to obtain the effect of sulphate cooking and at the same time avoid the difficulties in controlling the chemical composition of liquors containing sulphur compounds two pounds of ground sulphur were added to the digester immediately after the impregnation period and before cooking was commenced. Assurance was thus gained that each cook would contain 20 pounds of caustic soda and two pounds of sulphur and under similar conditions the resulting sulphides and thiosulphates would be the same in proportion to the caustic soda.
8.—The cooks were blown after periods of 40, 70, 105, 150, 173, 246 minutes, respectively, and by completely analyzing the black liquors and pulps so obtained the same results were secured as if accurate samples had been taken from one cook at the intervals mentioned.

The analytical methods used and the paper making and testing procedure are given in the paper referred to in the first paragraph.

Table 1 contains the complete cooking data of the sulphur soda cooks. The results of the beating tests obtained, using the ball mill method, are given in table 2. The results of the black liquor analyses are given in table 3, and table 4 gives the results of the chemical studies on the pulps. In figure 1 are plotted the results of the chemical studies of the black liquors from the paper referred to and figure 2 the results of the chemical studies on the pulps. Only the curves showing the results obtained with old liquors should be considered in this paper since the others were obtained under conditions not comparable. In figure 4 the results of the chemical studies on the black liquors of the sulphur-soda series are given and in figure 3 the studies of the pulps.

Physical Properties of the Pulps

In comparing the ball mill tests of the soda pulps from jack pine with the sulphur-soda pulps the action of the sulphur is very striking. This is particularly true in studying the folding tests. The maximum folding value for cook 846 of the soda series, the cook giving the highest value, was 530 double folds while cook 869, the best of the sulphur-soda series, gave a folding value of 2373. In the latter case the pulp took 100 minutes to bring out the folding characteristics against 80 minutes for the best soda pulp indicating the greater durability and toughness of the sulphur-soda pulp. The difference in tensile strength was not so marked, the maximum for the sulphur-soda series being 5170 meters breaking length, against 4100 meters for the soda series. Both required 80 minutes to bring up the maximum tensile test. The sulphur-soda series show an improvement in tearing qualities, the maximum tearing at 217 grams against 185 grams as the best for the other series. In the case of the Ashcroft test the highest value for the sulphur-soda series was 1.11 points per pound against .91 for the soda series. We can hereby see that in every test the presence of sulphur has brought about increased value and it is especially true of the tests which indicate toughness in paper, such as the folding and tearing. By cooking up to the maximum time employed in the series with but small excess of alkali the physical condition of the pulps of both the soda and sulphur-soda cooks are improved.

Bleachability of the Pulps

The influence of sulphur on the bleachability of the pulps obtained is also very marked. In the case of the soda series cook 846 was the easiest bleaching requiring 80 per cent bleaching powder while 869 of the sulphur-soda series only required 40 per cent. In each series the bleach consumption decreased with increased thoroughness of cooking but the sulphur-soda series cooks required half or less than half the bleach required by the soda series giving the same yields. Results obtained with aspen indicate that had the cooking been continued for longer periods coloring matter

[1] Engineer in Forest Products, Forest Products Laboratory, U. S. Department of Agriculture, Madison, Wisconsin.

[2] "The Chemistry of the Alkaline Wood Pulp Process. I. Aspen, Loblolly Pine, and Jack Pine by the Soda Process," by S. D. Wells, R. H. Grabow, J. A. Staidl and M. W. Bray, read at the Annual Meeting of the A. P. P. I., New York, April 12, 1923.

would probably have been reabsorbed from the liquor and the bleach requirements increased.

Chemical Properties of the Pulps and Liquor

The chemical tests on both the black liquors and the pulps do not show as marked differences as are exhibited in the beating and bleaching tests. In the case of the black liquors the amounts of volatile acids, such as acetic and formic acids, contained in the black liquor are about the same. In the case of the sulphur-soda series, however, the formation of these acids seems to be quicker and a maximum content of 4.5 per cent is reached at the end of the first half hour, while in the soda series one hour was required to reach approximately the same point. The rate of increase in the solution of lignin is slower in the sulphur-soda series, one hour and a half is taken to reach the point where the rate slacks off instead of one hour as is the case in the soda series. The maximum lignin at the end of the curve in the case of the sulphur-soda series, however, was 2.2 per cent. instead of 1.9 per cent at the end of an equal duration of time in the soda series. With prolonged cooking, however, the lignin content in the soda series increased further. The increase in total solids is typical of any of the alkaline cooks and there is nothing particularly unique in the curve.

The rate of reduction in lignin content of the pulps is slightly slower at first in the sulphur-soda series although at the end of one-half hour the rate of removal is much faster and at 2½ hours practically completed. At the end of 4 hours the lignin content of the pulp was only 2 per cent against 3.2 for soda pulp cooked 7 hours. This clearly brings out the greater effectiveness of the sulphate process for removing lignin. The most striking difference between the two processes is in the rate of removal of cellulose during the first half hour of the cook. In the soda series the cellulose content of the wood was reduced from 60 to 50 per cent during this period while in the sulphur-soda series the reduction was only one-half or from 60 to 55 per cent. This fact is of utmost importance in connection with the use of alkaline liquors in softening chips and later disintegrating them by mechanical means in the production of a high yield of medium grade pulp suitable for box board manufacture. This is especially significant since the partially cooked chips in the sulphur-soda series were much softer and easier to disintegrate than in the corresponding cook of the soda series. The amounts of alpha — or resistant cellulose in the pulps obtained from corresponding cooks of each series are about the same. As the cooks proceeded in each series the differences are not so marked although the reaction in the sulphur-soda series is more definite in nature and reaches completion much more quickly. The pulping action insofar as the chemical tests would indicate was practically finished at the end of 2½ hours in the sulphur-soda series, while in the soda series at least 3½ hours was required using similar cooking conditions.

General Conclusions

The general effect of sulphur in the cooking of sulphate pulps is to speed up the cooking reaction so that under similar cooking conditions the same degree of digestion is obtained at least one hour earlier in the

TABLE No. II

BEATING DATA ON JACK PINE PULPS

Pop test expressed in points, per pound, tearing test in grams, tensile test in meters (breaking length) and folding test in double folds.

Test	Pop test		Tearing		Tensile		Folding	
Process	Soda	Sulphur Soda	Soda	Sulphur Soda	Soda	Sulphur Soda	Soda	Sulphur Soda
Cook No	848	870	848	870	848	870	848	870
Duration of cook (hours)	3	2½	3	2½	3	2½	3	2½
Beating time to maximum test (minutes)	80	100	100	100	120	80	100	100
Maximum test	.81	1.11	174	214	3500	3600	220	1776
Cook No.	850	868	850	868	850	868	850	868
Duration of cook (hours)	4	3	4	3	4	3	4	3
Beating time to maximum test (minutes)	140	80	140	40	140	60	120	80
Maximum test	.87	.90	177	217	3700	3900	390	1953
Cook No.	846	869	846	869	846	869	846	869
Duration of cook (hours)	7	4	7	4	7	4	7	4
Beating time to maximum test (minutes)	100	100	100	60	80	80	80	100
Maximum test	.91	1.05	185	211	4100	5170	530	2373

TABLE NO. IV

JACK PINE SULPHATE SERIES

Cook No.	Time of Cook		Results calculated on basis of oven-dry wood									Results calculated on basis of oven dry pulp	
			Yield O.D wt	Hot H_2O Sol	Alk. sol (Corr.)	Lignin	Cellulose	α — cell	β — cell	γ — cell	Cellulose	
No	Hrs.	or mins.	%	%	%	%	%	%	%	%	%	
Wood	0		100	3 1	9 9	32 65	58 9	42 2	0 0	15 5		58 9
865 A	40		82.75	3 5	2 5	24 8	54 6	36 3	0 0	15 7		65 9
866	70		63 0	1 3	2 5	13 5	47 4	35 7	0 0	12 2		75 2
867	105		48 6	0 4	1 1	4 0	45 8	37 8	0 0	7 8		94 1
870	150		40 55	0 2	1 0	2 1	38 6	30 0	0 0	6 7		95 1
870	150		40 55	0 2	1 0	2 1	38 6	30 0	0 0	6 7		95 1
868	173		43 2	0 2	1 2	2 5	41 0	32 0	0 0	7 0		94 9
869	246		43 03	0 0	1 0	2 0	41 6	34 4	0 0	7 0		96 8

TABLE I.

COOKING DATA OF SULPHUR-SODA COOK ON JACK PINE WOOD

Impregnation, 30 minutes—110 lbs. pressure—cooking temperature, 170°C.

Project 1168–2

Cook No.	Time to Maximum temperature	Time at maximum temperature	Chips			Impregrating liquor									Cooking liquor			Volume of black liquor at end of cook	Yield of pulp	Ratio of free to total alkalie at end of cook	Bleach required 30% available chlorine per 100 lbs. oven-dry pulp
			Weight of wet chips	Moisture	Oven dry weight	Volume of impregnating liquor	Volume of return liquor	Difference	NaOH in impregnating liquor	NaOH in return liquor	Difference	NaOH in impregnating liquor	NaOH in return liquor	Diff. or NaOH used in cook	Gallons of liquor	Concentrations of NaOH	Sulphur added				
	Minutes	Minutes	Lbs.	%	Lbs.	Gals.	Gals.	Gals.	GPL	GPL	GPL	Lbs	Lbs.	Lbs.	Gals.	GPL	Lbs.	Gals.	Lbs.	%	Per cent.
865—A	(to 120°C) 40	....	120.2	11.60	106.2	60.9	40.6	20.3	92.1	76.2	15.9	46.80	25.50	21.3	21.98	125.7	2.0	35.2	82.75	35.1	0.486 lbs. sulphur unconsumed
866—A	70	0	112.8	11.49	100.0	65.1	50.1	15.0	98.6	80.2	18.4	53.50	33.50	20.0	20.00	120.0	2.0	28.0	63.00	65.3	.....
867—A	60	45	112.1	10.93	100.0	66.8	48.4	18.4	95.6	82.4	13.2	53.25	33.25	20.0	20.00	120.0	2.0	38.0	48.6	70.45	Bleached more than 80%
870—A	60	90	113.2	11.64	100 0	67.45	50.1	17.35	102.6	90.4	12.4	57.65	37.65	20.0	20.00	120.0	2.0	37.0	40.55	73.4	Bleached at 45%
868—A	85	88	113.7	12.12	100 0	65.40	46.35	19.05	98.4	87.0	11.4	53.60	33 60	20.0	30.00	80.0	2.0	49.0	43.20	75.67	Bleached more than 50%
869—A	70	176	112.8	11.42	100 0	65.8	48.0	17.8	98.6	85.0	13.6	54.00	34 00	20.0	20 00	120.0	2.0	42.5	43.03	85.43	Bleached at 40%
862—A	60	180	115.3	13.4	100 0	68.3	54.5	13.8	104.0	86.5	17.5	59.3	39.3	20.0	25.00	96.0	2.0	....	46.80	87.0	.....

TABLE No. III

RESULTS OF ANALYSIS OF SULPHATE BLACK LIQUORS – JACK PINE

Cook Number	Total time of cook	Volume of impregnation liquor	Volume of impreg. liquor returned	Volume of bl. liquor at end of cook	Lignin in impregnation liquor	Lignin in return liquor	Lignin in impreg. nation liquor	Lignin in return liquor	Lignin added to cook	Lignin in bl. liquor of cook	Lignin in bl. liquor of cook	Lignin obtained corrected	Total solids in bl. liquor	Total solids in bl. liquor	Organic acids in black liquor	Organic acids in black liquor	Ratio of combined to total alkali	Pulp yield
	Min.	Liters	Liters	Liters	g.p.l.	g.p.l.	Pounds	Pounds	Pounds	g.p.l.	Pounds	Pounds	g.p.l.	Pounds	g.p.l.	Pounds	Per cent	Per cent
865—A	40	230.0	153.4	133.0	3.0	4.1	1.5	1.3	0.2	12.4	3.6	3.4	58.4	17.1	14.48	4.2	35.1	82.7
866—A	70	246.0	189.2	105.8	3.1	3.6	1.6	1.5	0.1	39.0	9.1	9.0	96.7	22.5	12.90	3.0	65.3	63.0
867—A	105	252.8	186.8	143.5	4.3	2.7	2.4	1.1	1.3	66.9	21.2	19.9	128.1	40.6	12.55	3.9	70.4	48.6
870—A	150	255.0	189.4	140.0	1.7	1.9	1 0	0.8	0.2	64.9	20.0	19.8	120.9	37.3	11.70	3.6	73.4	40.5
868—A	173	247.2	175.0	185.2	2.4	3.6	1.3	1.4	0.1	51.2	20.9	21.0	91.3	37.3	9.07	3.7	75.6	43.2
869—A	246	248.8	181.4	160.6	2.8	3.3	1.5	1.3	0.2	62.0	21.9	21.7	122.0	43.2	12.62	4.5	85.4	43.0

ease of somewhat under cooked pulps and in the case of well-cooked pulps the difference is more marked.

The physical tests, however, indicate a marked difference especially in tearing and folding characteristics, the former being increased almost 20 per cent and the latter almost 500 per cent. Marked increase in bursting strength and tensile strength is also apparent.

Where equal yields of pulp are obtained the cooks using sulphur produced pulps bleaching with half the bleach consumption of those made without sulphur.

The slowing up of the removal of cellulose during the first half hour of the cook was also a distinctive characteristic obtained with the use of sulphur, the loss of cellulose being reduced 50 per cent thereby. Otherwise there is little difference in the chemical composition of the pulps.

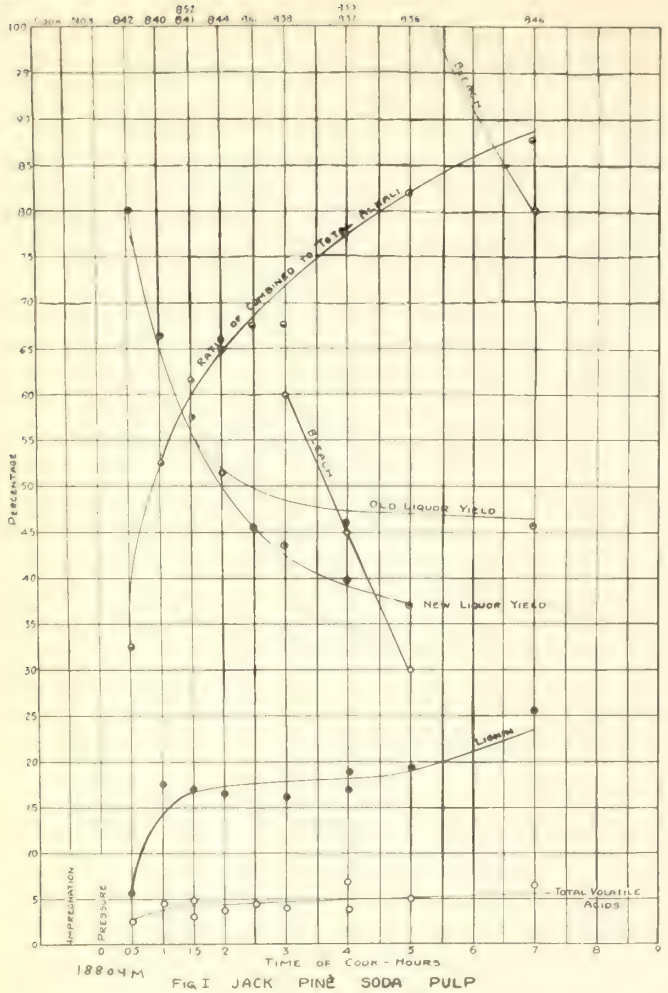


Fig I JACK PINE SODA PULP

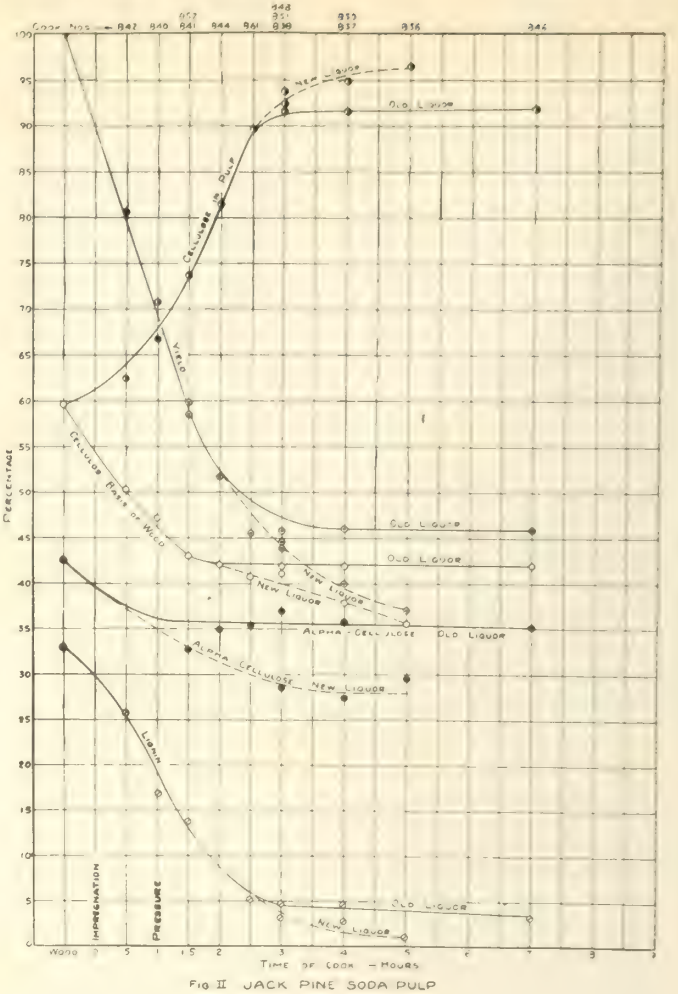
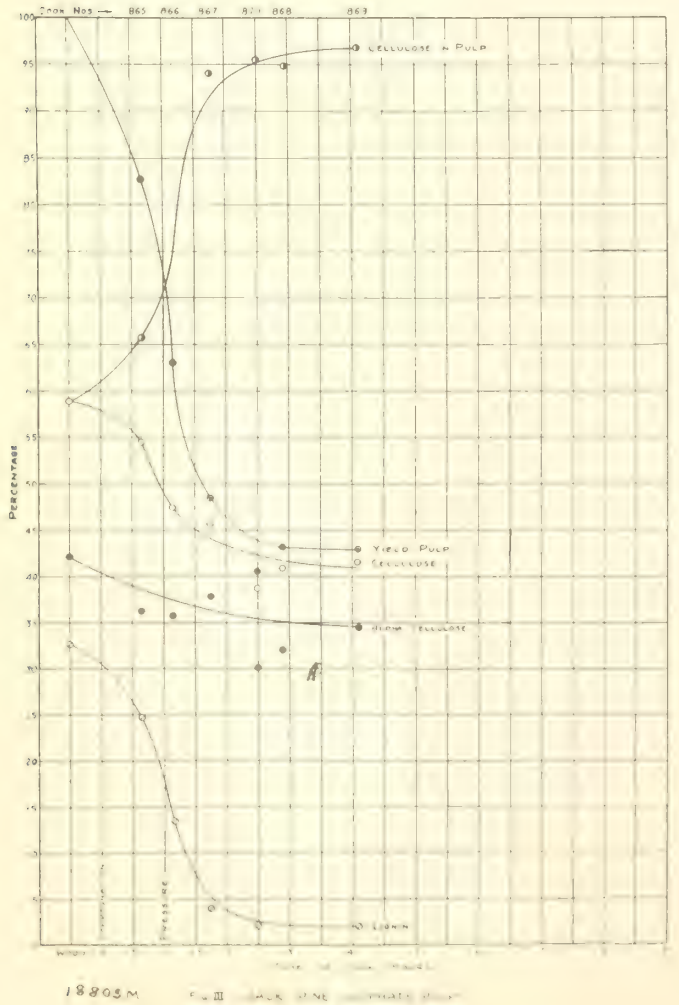
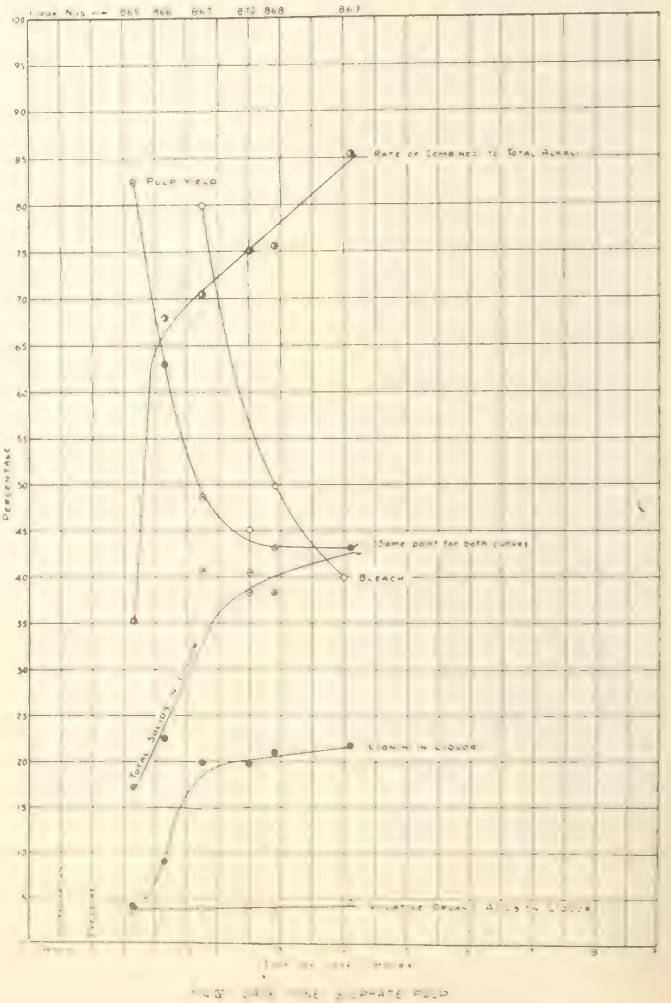


Fig II JACK PINE SODA PULP





The Removal of Electricity from Paper and Fabrics

By W. H. CHAPMAN IN "ALFELCO FACTS"

There is one branch of electrical science, the oldest known of any and yet which stands up to the present time the most neglected and least developed of any, and that is the branch known as static or frictional electricity.

About 600 years B. C., Thales, the Greek Philosopher observed the attraction which amber exerts on light substances, and called it suction. For centuries this has also been known to be true of other substances like sulphur, fur, silk, wool, and paper. These substances are classed as insulators because they can retain a charge for a considerable time. As a sponge or blotting paper soaks up water and retains it, so these substances pick up charges of electricity and retain them sometimes for several days or even for weeks in a dry atmosphere.

It is the easiest thing in the world to excite charges of electricity in these insulating substances. Friction or bending or pressure between the rollers of a machine will do it, and will charge them so that they will draw all the dirt and lint in their neighborhood on to their surface and will also cause them to suck firmly on to any other solid surface, and in the case of wool or silk or of cotton it drives the fibers apart by repulsion, and so interferes greatly in all the processes of manufacture of these materials.

For 50 years back this has been a serious hindrance in the manufacture of paper and cotton, woolen, and silk goods. Competition has kept calling for more rapid production and with increased speed of machinery the difficulty has increased until in some industries static electricity has become the limiting factor that curtails the production, in some cases 50 per cent or more.

It is a curious fact that men have known for centuries how to generate electricity in insulating substances, but that up to the year 1904 no means was known for its quick and complete removal. It is the writer's good fortune to be the pioneer in this new art of removing static electricity. As the pioneer I find myself in undisputed possession of a principle so simple and self-evident that it seems very strange the discovery was not made before. It is the one method of nature for doing it, viz.: In the presence of two opposing charges, as in alternating current, a charged body spontaneously selects the kind and quantity to exactly neutralize itself. The reason is simple: like kinds repel and unlike kinds attract each other; therefore in an alternating current where both kinds exist the charged material will find its affinity satisfied. But for the process to take effect, of course it is necessary to get the insulating material into conducting communication with the alternating current. This cannot be done by contact of the material with the alternating conductor and it doesn't need to but we make use of the peculiar property of a pointed conductor, by which the atmosphere in its vicinity is rendered a conducting medium. Ordinary air is a very poor conductor, but when ionized it is a good conductor for electricity of high voltage. Now if we put an alternating charge of high voltage on a pointed conductor, the air right at the point becomes ionized; that is, the minute particles of air, something finer than atoms, become charged and act as carriers and are fired like charges of shot at high velocity out into the surrounding atmosphere, so the atmosphere becomes filled with positive ions and with negative ions separate from each other, ready to move this way or that at the slightest attraction or repulsion that the charged material may exert upon them, so if the material is positive the negative ions rush to it and neutralize it while the positive ones are repelled away into space and wasted; and on the other hand if the material is negative, the positive ions rush to it and neutralize it and the negative ones are wasted in space. Whatever the charge in the material may be, whether positive or negative, it finds its affinity satisfied and perfect neutralization is the result.

In the year 1899, I was invited by the Y. M. C. A. of Portland to give a public lecture at their hall on Electricity, illustrated by numerous experiments. My early experiments in static electricity at once suggested themselves to me as a proper element to put into such a lecture to obtain the spectacular effects needed to hold the interest of a general audience, and accordingly a lot of apparatus was constructed to make a display of atmospheric discharges. A large part of this lecture apparatus was of no earthly use to any one after the lecture, as it had no bearing on any practical work, but the apparatus was nevertheless kept. In 1904, a letter came from a paper bag manufacturer complaining that his production was curtailed one third by static electricity in the paper bags. He had tried all known means but failed of relief and appealed to me. The lecture experiments of 1899 occured to me and I saw the solution of the problem at once, and within 5 minutes had made a positive demonstration of it with some of the old lecture apparatus which had lain in a corner of my office all those years of no use for anything.

I reported to the bag mill with a complete cure for all their troubles and the process was quickly adopted and is to-day an indispensable part of the equipment of the mill.

All pioneer work is beset with difficulties and special problems which have to be met and worked out for the first time, and this principle, simple as it is, has been no exception. In the first place a transformer had to be designed which would give about 12,000 volts but at the same time would not give an injurious shock to a person who might by accident get the whole current through his body. This was readily accomplished and I was making a practice of testing every transformer before shipment by passing its total current through my own body to prove its harmlessness. But this did not seem to satisfy the other fellow and furthermore, although it was very difficult even purposely to set fire to such substances as paper and wool with the largest current obtainable

from one of the transformers, yet the other fellow said it must not set fire to gasoline. This was a pretty hard problem to solve, but it has been done. The problem resolved itself into this—the current of the transformer must be so finely subdivided that it would be impossible for any one of the active points concerned in the process to receive enough of the current to set fire to gasoline and yet it must have enough to produce the ionizaton of the air on which the process depends. This is now accomplished by what is known as the type U inductor. This consists of a steel tube 1 1-2 inches diameter having a slot on one side extending from end to end. The slot is filled with little porcelain blocks. Each block has in it a copper sleeve with a point attached. The point projects through a hole flush with the outside surface of the porcelain, while the sleeve surrounds a well-insulated cable that passes through the center of the tube. Each point then receives its charge by induction from the cable and can only receive as much as is due to the surface of the sleeve. The surface of the sleeve being small the quantity of the charge is limited, while the voltage or pressure of the charge is kept at full value. This inductor is placed across the machine to be treated, where the material can pass by it at a distance of two or three inches. The action is so quick that the material may be moving a thousand feet per minute and yet the inductor gets in its work and the material passes away in a perfectly neutral condition.

DON'T FEAR STRANGE IDEAS

Don't be too hard on the man with the idea that seems strange to you and your neighbors. If it has merit it may come into general acceptance in your own lifetime; and if it hasn't, it's pretty sure not to do you any harm.

Charles Goodyear, who, by showing us how to vulcanize rubber, did as much as any one to make possible the automobile of today, was publicly denounced as insane from the pulpit of the church he attended.

Daguerre, inventor of the daguerreotype, was put in an asylum for saying he could transfer likenesses to pieces of tin plate.

When Franklin offered accounts of his experiments in electricity, the learned societies of Europe rejected them as of no scientific importance.

Bankers threatened to call in their loans and close George Westinghouse up unless he would abandon his "foolish notions" about alternating current.

Galileo discovered the telescope and got away with it. But when he pulled that one about the sun standing still, and the earth revolving, the authorities put him in jail until he was ready to make a recantation in the public square; and as he arose he is said to have muttered, "It revolves, just the same."

In his long journey from Montreal to the mouth of the Mackenzie river, and again to the Pacific ocean, made respectively in 1789 and 1793, Sir Alexander Mackenzie, while faithfully noting the condition of the country through which he travelled, mentions only thirteen places where the forest had been destroyed by fire. The past one hundred years, with the settlement, railway construction, and increased travel it has brought, has wrought such a change that anyone who followed Mackenzie's route across the continent could hardly lose sight of the vast brulés since created.

EDUCATING THE WORKERS

By WARREN B. BULLOCK, Information Service American Paper & Pulp Association

The paper mills of America employ about 150,000 wage earners.

Every individual of this army, man and woman, youth or adult, is affected by the campaign among the manufacturers, the employers, for better education of the workers.

Every individual is to be made a better worker, and thereby given opportunity for advancement or promotion, under the vocational educational campaign of the employers in the United States and Canada. Over $40,000 has been expended by the manufacturers in the preparation of the text alone for a series of books to be used in this educational work. Probably no American industry has ever undertaken a greater piece of work for the technical training of its employees in their own industry than this task, which has been briefly outlined above.

The work has been under way for three years, nearer four years than three, and the results of the preparatory work are just being made available to the men and women in the mills. Classes are just being organized in some of the mills, others are only preparing to establish classes, but eventually the plan is to have vocational education available through the most modern and up-to-date methods, for every worker in the industry.

It was over three years ago that the work was begun. Paper manufacturers on both sides of the international boundary contributed to a fund to engage editors special writers and other experts, for the preparation of the text book material. Today the third of the five contemplated volumes has been published and the other two will soon be available for use. The fund of $40,000 has not been enough to do even the preparatory work, but the balance needed is being secured by additional subscriptions.

Several states have undertaken to co-operate with the paper industry by making their university extension specialists available for the teaching of these courses. Some states are backward, not yet having begun actual use of the text books. The movement is growing, however, and this year there is class work in progress in most of the paper-making states.

The actual organization of the work of preparation of the text books now being published has been handled through the Joint Educational Committee of the Technical Association of the Pulp and Paper Industry in the United States and the Technical Section of the Canadian Pulp and Paper Association. The Technical Association is an associate member of the American Paper and Pulp Association, from whose members have come the major portion of the funds secured for the publication of the text books. With the two parent associations on both sides of the border backing this endeavor, the vocational education movement in the paper industry has the strongest possible organized support.

When the time came that the text books were nearing publication, J. C. Wright, director of the Federal Board for Vocational Education, was engaged by the joint committee to make an industrial survey of the industry, in preparation for the actual use of the text books, when they should be available for distribution.

As a result of this study, Mr. Wright recommended both technical and trade training. He also laid out a schedule of unit courses for the training of the employees for promotion along the normal line of advancement, to prepare them for advancement when the opportunity might come.

WILL FOREMEN STUDY?

By B. M. NUSSBAUM

(In *Textiles*)

While the following article refers to experiences in the Textile Industry, the results correspond to the testimony the editor has received from many pulp and paper men. Human nature is the same in both industries and we have here a valuable lesson from brother industrialists.

* * *

Will factory foremen study? The question is an important one. for I find some mill managers and superintendents who offer it as an objection to foremen training.

"You cannot master any subject without study," said the managing agent of a large knitting mill, "and the average foreman won't study. He'll enroll in a course to please the management, and go through the motions of attending lectures, perhaps; but when it comes to buckling down to a study program, he simply isn't there. He's not accustomed to study. He has only a grammer-school education, study habits were never fixed in his experience, and you can't make him go back to school at his time of life."

Some Manufacturers' Opinions

An executive in another mill expressed this opinion: "The improvement of foremanship lies in the education of future foremen. Don't waste time and money trying to make over those who are already "sot" in their ways, but concentrate on the promising young operatives from whom the future overseers, supervisors, foremen, and second-hands are to come."

Both of these criticisms have some fundamental truth. An educational program which does not call for study is not likely to be very far-reaching in its effect. And it is a problem to get grown-up men to submit to the discipline of study. Moreover, it is a good policy for the management to have its eye on possible material and to begin to train these future foremen as early as possible. But admitting all this does not mean that the present generation of foremen are to be neglected, or that the task of getting them to study their own jobs is an impossible one. Foremen's courses have been conducted successfully in dozens of American factories within the past three years, and at the present time I know that classes are being conducted in several mills with marked results.

The following figures are taken from the records of foremen training in fifteen companies, and show the percentage of those who enrolled for the training and followed it through the three months course to completion was 73 to 100 per cent.

The educational program conducted in the plants referred to was a standard course in foremanship. The requirements were not merely attendance at lectures or conferences, but the actual completion of a given amount of written work. To do the written work, the foreman had to master the text books of the course; in other words, he had to study. The figures at hand show that out of 996 men who began the course, 873, or 87 per cent. actually studied it. This is a truly remarkable record. Few university classes will show a higher percentage of completion. This does not mean that foremen will study anything. I have no doubt that the gentlemen quoted at the beginning of this article are right in their conclusions, granted the particular experience and observation which have been theirs. I know of one case in which the foremen rebelled against a training program, and their refusal to take the course that had been laboriously planned for them resulted in the resignation of a well-intentioned but somewhat inexperienced educational director. The foremen in this case — and rightly so, I think —refused to submit themselves to an elaborate study-program that involved mathematics, mechanics, economics, psychology, and other formidable subjects. It was too much for them, and they knew it; and the course which had cost the company considerable money to prepare, had to be abandoned.

Program Must Be Educational

Foremen will not study anything and everything that a benevolent management lays out for them. But they will very gladly join in an educational program, and actually study, under two conditions:

1. If the course is interesting and practical and adapted to their educational needs and limitations, and

2. If it is backed up by the live interest and active co-operation of the management.

If these two conditions are met, I believe any group of foremen can be stimulated to study, to the great gain of themselves in their work and to the great gain of the mills in better production, reduced spoilage, lowered labor turnover, and improved human relations within the entire organization.

The first essential is that the course be suited to its purpose. The purpose of foremen training is not to instruct foremen in technical processes, in the details of spinning, weaving, knitting, or other operations, or in the intricacies of equipment. Usually the foreman is already well-informed in this direction, and is not attracted toward a rehash of what he knows or thinks he knows. On the other hand, it is a mistake to conceive of foremen training as calling for a university extension course in the arts and sciences.

Improves Mill Management

The big purpose of foremen training is to improve the foremanship of the mill. That means better handling of men, raising the level of co-operation within the departments and between departments, and in general promoting the teamwork of the mill. To be sure, this requires some attention to economics, mechanics, psychology, and other applied sciences; but the presentation of these subjects in a well organized foremen's course is vastly different from the method pursued by the typical academic educator.

Some people think that text-books are unnecessary. That depends on what you want to accomplish. If the

idea is simply to provide some casual stimulus and entertainment, let the text-books go. But if you want to impart a sound and lasting knowledge of principles, you will find that this can only be done through prescribing a certain amount of text study.

The text material must be organized from the foreman's angle. You cannot depend on the ordinary text-books of economics, mechanics, and psychology; they are too abstract and too involved to hold a foreman's attention long. You must provide text-books written especially for him. They must talk about concrete cases, with illustrations taken from actual experience in textile mills or other industrial plants. The foreman is intensely practical, and every principle taught must be presented in terms of how it works out in the mill.

Then there should be lectures to reinforce the text-books. The lecturer can give local application to the teaching of the texts. He can clear up points, answer questions, and guide discussion. It goes without saying that the lecturer must be more than a speaker, more than a technician. He must be a human sort of person, for his chief function is to keep the course vital and interesting. He must have the qualities of a leader, and be warmly sympathetic and friendly in his relations with the men.

Conference After Lectures

Another feature is a group conference at the end of the lecture. In some mills, because of their remoteness from training headquarters and the consequent difficulty of getting competent lecturers, the plan of self-conducted weekly conferences has been used. This has proved successful in many cases, and if handled by a capable class leader will drive home the points of the teaching and provide a valuable forum for the discussion of foremanship problems. But where it is possible to provide lecturers, the group conference is not to be regarded as a substitute for the lecture, though it should always supplement and reinforce the lecture.

The final requirement of a course adapted to foremen is that it secures a certain amount of written work on the part of the foreman-student. This is necessary not only to check up and make sure that he is really following the course, but also to give some practice in applying the principles and methods taught. The problem method is the best device I know for providing this check-up and the neccesary pactice material. At the end of each section of the course a practical mill problem is stated and the student is called on to write out his solution. For example, a difficult complication in human relations within a department will be outlined. All the conditions are described in detail. Then the foreman is asked, How would you handle this situation so as to relieve the friction and promote the efficiency of the department?

To summarize, we note these four elements as essential to a successful course: (1) Text-books written from the foreman's point of view and in simple language, embracing only the fundamentals of modern foremanship; (2) lectures to amplify and apply the teaching of the text; (3) group-conferences to develop discussion, raise and answer questions and promote interest; (4) problems calling for written work by the foremen in applying the principles and methods to modern mill conditions.

The other "if" that must be met in order to enlist foremen in the training is represented by the attitude of the management. Foremen will support a well-organized course if the management shows full confidence and interest in the undertaking. It is not enough for the management merely to offer the training. The best results have been accomplished where executives have joined with the foremen, attended the lectures sat in at group meetings, and participated in the work.

I remember an experience in an Eastern mill. A meeting of the department heads was held to present a training progam. The president, addressing the meeting, said the company had arranged to make an educational opporutnity available to them. He supposed it was a good course, for it had been used, apparently successfully in other mills. The company was willing to provide the training for any who wanted it. But they must distinctly understand that each one who took the course did so entirely on his own responsibility. Anyone who cared to enroll could sign up after the meeting.

Executives Must Show Confidence and Interest

The material result of this chilling statement was that of the 76 men present, three volunteered to take the course. If that president had shown his personal confidence in the program, if he had believed in it and told the foremen so, I venture to say that at least three-fourths of them would have come in. This is the usual proportion whenever the management gives its cordial support. This does not involve the slightest coercion or discrimination against the man who declines to enroll, but it does involve *leadership*. In education as well as management, the executives in a plant have to take the lead. The foremen will not seek opportunities for self-improvement, except in rare instances. But if the management will show a real interest, most foremen will fall into line eagerly and make the most of the opportunities offered.

Mill Superintendent Joins Study Class

I know many instances in which the mill superintendent joined with his foremen in one of these study groups. In one company where foremen classes were organized in four mills, the superintendent of each mill enrolled and faithfully followed the course. One of the best groups I ever saw — one in which every man who enrolled stuck through to the end and finished all requirements — was a class which included not only the foremen but the vice-president of the company and the superintendent of the mill.

Executives who participate in foremen classes do not find the experience boresome. "It was one of the most stimulating experiences of my life," said one superintendent at the end of the course, "and a regular eye-opener. I know my foreman better now, and because of our common background of training we can discuss problems together more understandingly."

The answer to the opening question is obvious. Your foremen will study if you provide a training-course adapted to their needs, and if you join with them sincerely in the enterprise.

The extreme simplicity of "squirrel-cage" motors make them ideal where the starting duty is comparatively light and where no speed variation is required. They are started with compensators, and in many cases a meter is added to indicate the load.

PULP AND PAPER NEWS

The Great Eastern Paper Company, Madeleine River, P.Q., under the charge of Mr. C. W. Mullen, is now turning out groundwood.

Mr. W. B. Carmichael, of W. B. Carmichael & Co., with offices in Sydney, Melbourne, and Auckland, is now on a visit to Canada in connection with the firms business as representatives in Australia and New Zealand of Canadian paper mills.

The members of the Toronto Board of Trade have chartered the steamer "Richelieu" for a trip to the East. The program includes visits to the Mille Roches mill of the Provincial Paper Mills, Limited, and of the Cornwall mill of the Howard Smith Paper Mills, Ltd.

The Becker interests have under consideration the revival of some development plans which were laid aside in 1920, owing to the depression in the pulp and paper business. We understand that these plans include the construction of a very large newsprint mill at Chicoutimi. In another column will be found particulars of a proposed railway project which, if it materialises, will enable pulpwood to be brought from limits on the Peribonka to the pulp mills at Chicoutimi and Port Alfred.

The annual picnic of the employees of the Rudd Paper Box Company, Limited, Toronto, took place on Saturday June 16 to Port Dalhousie. The outing began in the morning when a boat conveyed about 125 of the employees and their friends across the lake. There was a full day of sports and other pastimes at the Port and in the evening the company provided a supper at which Superintendent G. Garnette, who is leaving shortly on a trip to England, was presented with a steamer trunk by the employees. The prizes won in the athletic events were presented by President W. P. Bennett also at the evening meal. There was a burlesque band and a lot of other stunts and the whole affair demonstrated the fine feeling which exists between the company and its employees.

Joseph Thompson, of the Lagan, Swift & Brigham Division of the United States Envelopes Company, Worcester, Mass., called on the Toronto paper trade last week.

Jack Ebbels, of the American Writing Paper Company, Holyoke, Mass., was a business visitor in Toronto last week.

T. J. Allan and Jack Hewitt, of Paper Sales, Limited, Toronto, have returned after a business trip to New York, during which they visited the Brooklyn factory of the Arabol Manufacturing Company, Paper Sales being the Canadian representatives of the Canadian plant at Brampton, Ont.

David R. Robertson, of Montreal, General Manager of the Canadian Paper Board Company, Limited, was a business visitor in Toronto last week.

Business visitors to Toronto last week were Frank Thorne, of Price Brothers; Superintendent Ball of the Jonquiere mill of the company and J. D. Falkenburg of the paper sales department.

Graham Brown, of Montreal, has joined the sales staff in Toronto of the Howard Smith Paper Company. Mr. Brown, who is a graduate of McGill University, has just recently broken into the paper game.

The Ontario Government are calling for tenders for the right to cut pulpwood and timber on the area situated in the watershed of the Trout and Chapleau Rivers in the District of Sudbury, comprising an area of about 1,049 square miles.

Joseph Benson, aged 30, and employed by the Toronto Waste Paper Company, 19 Edward Street, Toronto, was killed on June 13 while engaged in loading a truck load of paper onto a car at C. N. R. freight sheds, Simcoe and Wellington Streets, Toronto. The unfortunate young man was caught between the truck and the car and was crushed to death.

C. Howard Smith, head of the Howard Smith Paper Company, brought honor to himself and the Canadian paper trade generally in Toronto last week when he was elected President of the Canadian Manufacturers Association at the annual convention of that body held at the King Edward Hotel.

The Lawrason-Doughty Company, Limited, paper bax manufacturers, expect to be in their new paper box factory they are building on Hamilton Street, Toronto, about July 1st. The building is practically completed and is now being equipped. The firm have been operating on Church Street, Toronto.

O. H. Moore, General Manager of Hinde & Dauch, board manufacturers, Toronto, has been spending an enjoyable holiday in the Adirondacks and along the Maine Coast.

E. J. Robertson, Manager of the National Slag Products Company, Hamilton, Ont., was in Toronto last week seeking the interest of paper men in a new process of de-inking and de-fibering waste paper in the manufacture of pulp.

C. N. Ramsay, of Ritchie & Ramsay, Toronto, has dropped the worries of the paper business for a time and will spend a few weeks with his family at their summer home at Eastbourne, on Lake Simcoe.

F. G. Lancaster, formerly with the Maritime Paper Company, Moncton, N.B., which has been taken over by the Federal Paper Company, Montreal, has joined the sales staff of the Canada Paper Company in Toronto and will divide his time between Toronto and Montreal. Mr. Lancaster was a former representative of the Canada Paper Company in the Maritime Provinces.

H. F. E. Kent, Toronto, President of the Canadian Pulp and Paper Association, states that all book and writing mills are operating close to capacity at the present time and he also says that there is a gradual improvement in the envelope manufacturing trade. As far as the manufacturing stationers are concerned this is the quiet period for them. Mr. Kent, speaking of conditions in the pulp and paper arena generally, said that the outlook was bright. In connection with the proposed prohibition of the export of pulpwood from private lands, which is being considered by the Federal Parliament who will appoint a commission to investigate the matter, Mr. Kent, speaking for himself

personally, and not as an official of the Pulp and Paper Association, stated that he was strongly in favor of the manufacture of all pulpwood on private lands into pulp and paper in Canada. He did not believe in the export of raw material, stating that the Dominion possessed wooded resources which, if used to their fullest extent at home, would tend to make Canada the leading pulp and paper country of the world.

A. R. Coffin, president of the Truro News Publishing Company, Truro, N.S., and his superintendent, S. C. Parks, were in Toronto last week on their way to Ottawa.

Secretary-Treasurer S. J. Frame, Toronto, has sent out the programmes for the Eighth Annual Convention of the Canadian Paper Box Manufacturers' Association, which is to be held at the Clifton House, Niagara Falls, Ont., on June 25-26. The convention will open on Monday morning, June 25 with an exchange of greetings and the annual address by the president, C. Winter Brown, of the D. F. Brown Paper Box & Paper Co., Ltd., Coldbrook, N.B. In addition to the routine reports there will be a talk on costs by a representative of Ernst & Ernst, (Buffalo branch) including cost demonstration of a man's shoe box. D. H. McDermid, of the Somerville Paper Boxes, Limited, London, Ont., will read a paper on "Sanity and Poise in Competition", and C. T. Reid of Charles Reid & Co., Hamilton, will lead in a discussion in "Everybody's Hour". Other features at the various sessions will include the following: "Bonus and Incentive System," paper by A. B. Green, of the Dominion Envelope and Cartons, Limited, Toronto: "Competitors, Yet Partners in the Industry," paper by Charles V. Syrett, of the Victoria Paper & Tfine Co., Limited, Toronto; "Competition in Montreal", paper by J. L. Constantineau, of the King Paper Box Company, Montreal; "Stimulating the Demand for the Paper Package," paper by L. P. Morrison, of the Automatic Paper Box Company, Toronto; "Accidents," paper by F. W. Fisher, of F. W. Fisher & Co., Toronto; "Training to Make Quality Boxes", by George O. Slingerland, of Mechanicville Paper Box Co., Mechanicville, N.Y.; "The Marking Act — Its Effect on the Paper Box Industry", by James Northey, of the Telfer Paper Box Co., Ltd., Toronto; address on "The Outlook for Canada," by Rev. Canon Cody, Toronto. A couple of banquets have been arranged for and there will be a number of other features of entertainment to brighten up the business of the convention.

In the matter of the will and estate of the late Sir William Gage, head of the big Toronto manufacturing stationery house of W. J. Gage & Co., Limited, the courts in Toronto have given direction for the trial of certain issues. The main issues in question are whether Lady Gage is entitled to dower in addition to benefits under the will; whether the National Sanitarium Association is entitled to the delivery of certain bonds for $98,566.51, and interest, being the balance of a subscription of $160,000 made by the late Sir William Gage in February, 1914, and whether a daughter is entitled to receive from the estate all money expended by her on the purchase of No. 136 Jewett Parkway, Buffalo, under an alleged promise by her father.

CHARGE DUMPING NORWEGIAN KRAFT IN U.S.

Washington, D.C., June 8. — That the dumping of kraft paper from Norway has been working a hardship upon American paper manufacturers was combatted by representatives of importing companies in a hearing before McKenzie Moss, assistant secretary of the Treasury here today. The American Paper and Pulp Association and independent manufacturers of kraft paper were represented, while Wilkinson & Brothers were represented in person and by counsel.

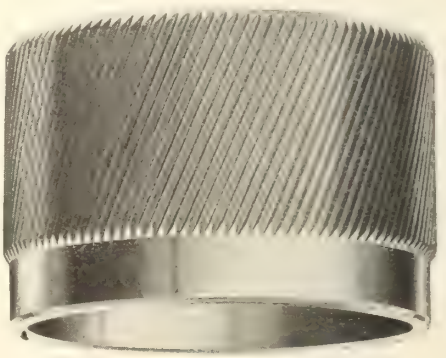
The importers based their claim that there was no dumping of figures tending to show that Norwegian kraft paper was a minor element in the situation.

The domestic paper manufacturers, however, pointed out that they had submitted definite evidence of the sales of paper in this country at prices which were below the current prices in Norway.

The customs authorities showed that sales of Norwegian kraft in this country were made at 17 per cent. below the current prices in Norway, this being conclusive evidence of dumping, even when based upon the figures of the consular invoices. Later they had made special investigations, and found that the invoice prices were higher than the actual current prices in Norway, thus increasing the spread between the Norway prices and those for which imported kraft was sold in this country.

A NEW TYPE OF BURR

The International Burr Corporation of Canada, Belleville, Ont., is now manufacturing a new type of burr for groundwood pulp stone that was invented by Mr. Frank B. Potter, superintendent of the DeGrasse Paper Company. It will be noticed on the illustration that this burr which fits on a regular spindle has a band or depressed shoulder at one edge. This serves two purposes. In the first place, with the band leading the burr, it rolls off the high spots on the stone



and thus reduces the amount of slivers and chop and consequently produces a more uniform quality of pulp. In the second place, the band controls the depth to which the burr will cut into stone, and with a uniform cutting action, we have another factor in maintaining uniformity of the product. Without some such gauge as is thus provided, it is difficult for the attendant always to get the same depth of cutting and uniform dressing of the stone. The general superintendent of a large paper company in New York State testifies that the use of this burr has increased production per horse-power per grinder, that it will dress stones very rapidly, that it reduces sliver waste and maintains the stock uniform and with desired freeness.

It takes a consistent life to witness in the home circle. Sometimes we are dumb there because they know it the more's the pity!

assignor to Process Engineers, Ltd. Can. patent 228,279, Jan. 23, 1923. Hot size containing 20 to 50% of solids is mixed with sufficient hot water (above 175° F.) to give a mixture with about 8% solids, agitating violently during dilution. The hot dilute size is then mixed with cold water, without any special means of agitation, and the more dilute it is made the more stable it becomes.—A.P.-C.

A-14 K-10 Effect of Light on Vegetable Size. L. P. ZHEREBOFF. **Paper** 31, No. 26 143-146 (Apr. 18, 1923); **Pulp & Paper** 21, 436 (Apr. 26, 1923); **Paper Trade J.** 76, No. 14, 73 (Apr. 5, 1923).-A.P.-C.

A-14 M-12 Testing of Sizing Quality in Paper with Valley Tester. J. E. ALEXANDER. **Paper Trade J.** 76, No. 15, 187-191 (April 12, 1923); **Paper Mill** 47, No. 15, 76, 78, 80 (Apr. 14, 1923); **Paper** 31, No. 26, 45-48 (Apr. 18, 1923); **Paper Ind.** 5, 331-333 (May 1923). The author comments on observations made from using the Valley size tester in daily routine and in special work. He concludes that the Valley tester cannot be used for testing the sizing qualities of different grades of paper, that in order to get a reliable test on the same grade of paper the formation and the furnish must be absolutely uniform, and the main factors influencing the results are formation of the sheet, furnish and base weight. A curve is given showing the increase in sizing tests with the increase in base weight for a hard sized paper. In discussing his results the author attributes lack of uniformity to the mechanism of the penetration of the test solution through the paper.-A.P.-C.

A-14 M-12 Ink Flotation Versus Valley Size Tester. M. L. CAUST. **Paper Trade J.** 76, No. 15, 191,193 (Apr. 12, 1923); **Paper Ind.** 5, 333-4 (May 1923). Curves are given showing the relation between the two tests. A paper tested by the flotation method shows a penetration in about 1.5 to 3.5 (average 2.5) times as many seconds as is obtained by the Valley tester. Results given show that it is possible to make a set of tests on the Valley tester and check results with an average maximum variation of about 9%, while with the ink flotation there is a slightly higher variation. When Valley tests are repeated after a few days they show far better agreement than the flotation method; but after several months they do not show such good agreement.-A.P.-C.

A-14 Routine Methods for the Examination of Wood-Pulp Adopted at the Forest Products Laboratories of Canada. E. PARKE CAMERON. **Pulp & Paper** 20, 2011-2015 (Dec. 21, 1922). A detailed description of the methods used for the determination of fiber length, strength, beater and unbeaten bleaching, bleach consumption and loss in weight, and color.-A.P.-C.

A-14 Uses of the Microscope in Paper Mills. JAMES STRACHAN. **Pulp & Paper** 21, 57-60 (Jan.18, 1923); **Paper** 31, No. 13, 7-10 (Jan. 17, 1923). An outline of the uses to which the microscope can be put for controlling processes and products in pulp and paper mills and of its possibilities as a research instrument in the industry.-A.P.-C.

Groundwood

D-1 K-1 Freeness Testing in a News Print Mill. FREDERICK W. BRADSHAW. **Pulp & Paper** 21, 375-379 (April 12, 1923. The author describes in detail the Green freeness tester and its use, and outlines the system of freeness control used at the Kenogami mill of Price Brothers. From a six weeks' test on one of the paper machines, it was found that the Green tester gives reliable information as to the draining qualities of the stock on the paper machines, and that, providing the quality and percentage of sulphite stock is kept fairly constant, the main cause of variation of the paper machine stock is due to variations in freeness of the groundwood. A discussion of the factors affecting the freeness of the paper machine stock "as run" shows that, providing the quality and percentage of the sulphite, the consistency of the paper machine stock, and the amount of white water are kept reasonably constant, it should be possible to furnish a groundwood stock whose freeness would be made to vary so as to offset the seasonal variation in temperature of the paper machine stock, this giving a uniform test for the freeness of the paper machine stock "as run."-A.P.-C.

Bleaching

H-1 The Determination of Available Chlorine in Bleaching Solutions. F. DIENERT and F. WENDENBULCKE. **Ann. fals.** 15, 338-339 (Sept.-Oct. 1922); **Pulp & Paper** 21, 11 (Jan. 4, 1923); 20, 2047 (Dec. 28, 1922); **Paper Trade Journal** 75, No. 25, 58 (Dec. 21, 1922).-A.P.-C.

H-4 Preparation of Bleach Liquor. J. H. MACMAHON assignor to Mathieson Alkali Works U.S.A. patent 1,426,752, Aug. 22, 1922; Can. patent 228,059. Jan. 16, 1923. See article by MacMahon in **Paper Mill** 45, No. 47 6 (Dec. 2, 1922); **Paper Trade J.** 76, No. 1 60 (Jan. 4, 1923).-A.P.-C.

H-4 Preparation of Bleaching Powder Solutions. J. H. MACMAHON assignor to Mathieson Alkali Works. Can. patent 228,060, Jan. 16, 1923. Bleaching powder is mixed with water in about the usual proportions, and without waiting for the solution to settle chlorine is passed through until practically all of the free lime has been acted upon. It is claimed that the resulting solution is quite stable and is more active than ordinary bleach liquor. There remains very little sludge and what does remain settles very rapidly.-A.P.-C.

H-5 Process of Bleaching. G. ORNSTEIN assignor to Electro Bleaching Gas. Co. Can. patents 226,826, 226-827, 226,828, Dec. 5, 1922.

No. 226,826. The bleaching is accomplished by means of a solution of chlorine in water of such dilution that practically all the chlorine (95—100%) is hydrolyzed to hydrochloric and hypochlorous acids.

No. 226,827. Sufficient base is added to neutralize the hydrochloric acid produced by the hydrolysis of the chlorine; and during bleaching sufficient base is added to neutralize the hydrochloric acid produced by the reduction of the hypochlorous to hydrochloric acid.

No. 226,828. Chlorine is absorbed in water. One molecule of sodium carbonate is added per molecule of chlorine (Cl_2) to convert the hydrochloric acid into chloride and form sodium bicarbonate, without affecting the hypochlorous acid. The dilution must be such as to give practically complete hydrolysis. The liquor should be used.-A.P.-C.

Paper Making

K-1 Rapid Means of Determining Stock Density. F. M. WILLIAMS. **Paper Trade J.** 76, No. 18, 50 (May 3, 1923). A weighed or measured amount of stock (or white water), depending on the amount of fiber contained, is passed through a specially designed centrifuge. After the water has been thrown out, without removing the sample, a specially designed electric heater is inserted in the center opening of the revolving

(Continued on page 638)

UNITED STATES NOTES

Exclusive distribution rights of the British patent paper film projector described in these columns some weeks ago have been assigned to the Harry Levey Service Corporation, New York City. A demonstration of the new device and the process involved was given last week at the offices of the company, 130 West 46th street. There have been several paper films developed, but this is the first to receive a public demonstration in New York. The invention, it is claimed, has been brought to the practical stage in England over a period of three years. The tests last week showed that pictures projected from the paper films will be available at once for educational use, if not for general use in motion picture theatres. The distributors intend using the device for the present in churches, schools, colleges and the home. The film is made from opaque non-inflammable paper. It is not highly combustible, is said to cost, but one-fourth the cost of celluloid prints, and can be mailed in cardboard boxes at quite a saving.

Lieut.-Col. Frederick Lawson, nephew of Viscount Burnham, and associated in the publication of the "London Daily Telegraph", sees much needless waste in newsprint paper by American publishers through practices which he believes might easily be changed. Col. Lawson is in America with the delegation of English advertising men who have been attending the meeting of the Associated Advertising Clubs of the World at Atlantic City. "You are creating a white paper famine," said Col. Lawson, "It isn't a question of sacrificing profits. Your advertising rates are much too low, according to our standards. You should get the same price for a quarter page that you now get for a full page; the advertiser would get the same results and the white paper supply would be conserved. Of course, this couldn't be done unless all the newspapers agreed to it. But the white paper situation is growing serious, newspapers are helping to make it so for themselves as well as the rest of us. I hope when we get your advertising men to London next year we can show them some vital facts about this that will help in solving the problem."

A German manufacturer has been developing a large trade in writing paper as a result of a special process which gives him decided advantages under the Mexican tariff schedule. The Mexican customs admit white paper with not more than 40 per cent. ground wood under a duty of 23 centavos per kilo, while paper containing 40 to 70 per cent. or more of ground wood pay 12 and 5 centavos, respectively. By an effective method of bleaching and sizing, a paper having a large ground wood content, this manufacturer can supply a very presentable sheet, which is popular in the market because of the low cost at which it can be landed under the above-mentioned provisions.

The American News Company is distributing to news dealers and stationers a line of "Nile" stationery, helping them to cash in on the popular interest aroused in things Egyptian since the discovery of King Tut's tomb in the Valley of Kings.

The paper car wheel that got considerable notice years ago and which was used quite extensively in railroading has again been replaced by the old reliable steel wheel, according to the "Pathfinder". The Pullman Company now reports that the paper wheel is only a memory, the last one having been dropped from its service some time ago. It was found impractical, they say, the main objection being that if a car remained stationary for any great length of time the paper core "flattened," so to speak. Originally it was argued that the paper center would not be susceptible to the expanding and contracting influences of heat and cold. It was also presumed that the paper core helped deaden the sound under passenger cars. The paper wheel retained its popularity for about 25 years. A 38-inch paper wheel encased in a three-inch tire, weighed 1,070 pounds. The present all-steel wheel which has taken its place weighs 145 pounds less than the paper articles. Common strawboard was used in the manufacture of the paper-cored wheel. About 192 sheets were damped and pressed together. This formed the block from which the wheel was made. The block was turned on a lathe until the proper spherical form was reached. Contrary to a popular idea, the whole wheel was not paper — only the inner part was.

More than 6,200,000 forest trees, or enough to reforest about 6,000 acres of land, have been planted this spring by private owners of forest land in Pennsylvania, Chief State Forester Major R. Y. Stuart states.

A report just compiled by the Salvation Army shows that through its social service department American house wives annually are saving enough waste paper to conserve approximately 9,000 acres of standing timber. The report shows that throughout the United States during the last fiscal year the Salvation Army wagons collected 55,000 tons of waste paper, the bulk of it being news print. The money received for the salvaged paper is used exclusively for the maintenance and extension of the social service branch of Salvation Army work, says the report.

Reforestation and timber conservation activities in New York State should be greatly aided through the establishment of a new ranger school at Cranberry Lake, as a branch of the Syracuse College of Forestry. A measure authorizing the improvement has been enacted and the school is to be in operation by next spring if no delays occur. It will be on 1,800 acres of forest land, where practical reforestation and the growing of trees will be taught. The protection of forests against fires, fungi and other tree enemies is part of the course now given. The new building will have accommodations for seventy students, also quarters for the teachng staff, drawing rooms and laboratories. The Ranger School is designed to furnish a preliminary forestry education to qualify forest rangers, forest guards or others needed in the management of forests.

A miser grows rich by seeming poor. The extravagant man grows poor by seeming rich.

The best manners are perfectly natural, show no sign of effort, and are never self-conscious.

ANGLO-CANADIAN PULP TRADE GROWING

Mr. G. R. Hall Caine, a director of Becker and Company, Limited, London, England, and of the associated companies, is again visiting Canada. He will not return for another month. Mr. Hall Caine has two main objects in view — one in connection with plans for the development of the Chicoutimi Pulp Company and the Bay Sulphite Company, and the other in connection with a proposal to construct a railway from Port Alfred, P.Q., into the Peribonka district, in three stages, a total of one hundred and twenty miles.

In an interview with a representative of the Pulp and Paper Magazine, Mr. Hall Caine stated that it was important for the British mills to have a sufficient supply of pulp and he was here to take steps to that end. Having regard to the recent strike in Scandinavia, and the quickened demand in England and the United States, it looked as if there would be a shortage in the supply. Some of the Scandinavian mills had cancelled orders both in Great Britain and in the United States under the "force majeure" clause of the contracts, and Mr. Hall Caine stated that a Swedish producer had cancelled, under this clause, and at the same time offered the same firm some tonnage at a higher price.

Mr. Hall Caine emphasized the point that the demand for the pulp and newsprint in England had been stimulated to a considerable extent. The price of paper had reached the point where some publishers felt justified in enlarging their editions, and also increasing their prices; other publishers had entered on circulation campaigns. There was also the factor of advertising, which was rapidly increasing. He, therefore, looked for a considerable rise in the consumption of paper, provided that the increased price of the raw material did not force up the finished product to a point where it became uneconomical for the publishers to push the sale of their papers. The extent of the demand could be judged by the fact that the British mills were fully employed on contracts up to the end of the year.

With regard to the railway project, he was asking for assistance from both the Federal and Provincial Governments, and he was optimistic as to obtaining the usual subsidy from the Provincial Government. This line was a necessary adjunct to the plans for the expansion of the companies in Canada which he represented. While the companies had considerable limits available for the Chicoutimi and Bay Sulphite mills, it was felt to be necessary to provide means for transporting wood from the limits on the Peribonka. There was no danger of any shortage of pulpwood, but the directors were looking some way ahead, and were laying plans which would make for the development of the Chicoutimi and Bay Sulphite mills. The directors desired to provide for future requirements. The directors of the companies held that the trade to be done would justify the construction of the line. There was a ready-made business in the way of transporting pulpwood, besides which the line would open up a lumber and fertile country.

Mr. Hall Caine spoke of the use of Canadian pulp in Great Britain. He stated that his experience showed that the Canadian product was becoming more and more popular, and during the last two or three years its use had largely increased. A few years ago the British mills had to be persuaded to try Canadian pulp as an experiment; after that, some of them regarded it an insurance against any possible trouble in Scandinavia, from which they drew their main supplies; while now, there was an anxiety amounting to keenness to get Canadian pulp, of which was not sufficient to meet the demand. Canadian pulp was regarded as being of a very high grade, and for some purposes was more suitable than the Scandinavian product. It must not be forgotten that for many years the English mills had used Scandinavian pulp, and naturally, some prejudice had to be overcome. At first, when some of the mills used Canadian pulp, they did not obtain good results because they did not know how to use it properly; gradually they learned the proper method to get good results, and now the mills appreciated the fact that Canadian pulp was a first-class product. The effect of this recognition was seen in the greater demand for Canadian pulp.

SODIUM SILICATE AS A SEALER

Silicate of Soda is not good to eat. In spite of the fact that it is perfectly clean, sterile and non-poisonous, no one is sufficiently optimistic to believe that it can be valuable in food products. The nearest it comes to these essential commodities is when it is used as a grease proofing material on the inside of food containers. Cartons for food products, such as butter, biscuits and spices, or wooden pails such as lard pails and barrels used to contain vegetable and animal fats and oils require an impervious coating.

Because it is both clean and economical, and because it is very easy to apply, its use for these purposes is well nigh universal. Its quick-drying properties in particular are attractive to the manufacturer who is keen to put his product through his plant as rapidly as is consistent with quality. Suppose, for instance, that the board used for making cartons had to be put through a slow-drying process such as is necessary in the manufacture of wall paper or photographic film, instead of being run through a pair of silicate coating rolls at the rate of 200 linear feet per minute without any special provision for drying,—the operation would seem pretty slow and costly. Of course, it is necessary to use the right silicate and to work it at a strength suited to the characteristics of the board to be coated, but that is, fortunately, not a difficult matter.

Or again, consider the advantage of sizing a barrel with a sterile material which dries in a few hours as compared with using a substance which because of its animal origin is a fertile field for the growth of molds and bacteria and which requires a much greater drying time.

These two instances show how much drying is a matter of conditions. The coated paper dries in a fraction of a second because a thin layer of silicate is spread on a porous material and exposed to warm dry air. The silicate sizing in the barrel requires several hours to dry because a thicker coating is needed and the ventilation inside of the barrel is naturally very poor. If you seal silicate in an air and water tight container it will not set at all.

There is no greater blessing that you can attain here on earth than peace in your surroundings and peace in your heart.

basket, which causes a current of superheated air to pass through the fibers, drying the sample bone dry in less than 5 minutes. Means are provided for quickly removing the dry sample, which comes out as a strip about 2.5 by 22 in. Ignition of a portion of this strip gives the amount of fiber.-A.P.-C.

K-7 K-23 Use of Rubber Latex in Making Paper. ISMAR GINSBERG. **Paper** 31, No. 24, 7-8 (Apr. 4, 1923). A brief discussion of the potentialities which lie in the use of rubber latex in the manufacture of paper, with special emphasis on the elasticity conferred on the paper by the rubber.-A.P.-C.

K-7 K-23 Use of Rubber in the Manufacture of Paper. RAYMOND FOURNIER, **Papier** 25, 544-547 (Dec. 1922). Brief discussion of Kaye's patent. (Compare **Pulp & Paper** 20, 699, Aug. 117, 1922; 2050, Dec. 28, 1922. **Paper Trade J.** 75, No. 4 53, July 27, 1922).-A.P.-C.

K-7 K-23 Rubber Latex in Paper. MERLE B. Shaw and George W. Bicking. **Paper Trade J.** 75,No. 26, 53-55 (Dec. 28, 1922). After briefly summing up the invention and statements made by Kaye in subsequent publications (see **Pulp & Paper** 20, 699, 2050, 1923; **Paper Trade J.** 75, No. 4, 54, July 27, 1922) the authors describe tests carried out on a semi-commercial scale on book, wrapping and writing paper, which show that there seems to be a slight increase of bursting strength on book paper, but that the variation of the other strength qualities seems to be within that of testing different runs.-A.P.-C.

K-7 K-23 American Test on the use of Rubber Latex in Paper Making. FREDERICK KAYE, **Paper Trade J.** 76, No. 9 55 (March 1, 1923); **Paper Mill** 47, No. 10, 32 (March 10, 1923). The inventor takes exception to the results of tests published by Shaw and Bicking of the U. S. Bureau of Standards (**Paper Trade J.** 75, No. 26 53-55, (Dec. 28, 1922) on the ground that the results show conclusively that the latex use was deteriorated.-A.P.-C.

K-7 K-23 Application of Rubber Latex to Paper Making. FREDERICK KAYE. **Paper Ind.** 4, 1407, 1409, 1411, 1413 (Jan. 1923). A general outline of the possibilities of the author's invention practically as soon as prepared.-A.P.-C.

K-10 The History and Development of Paper Sizing. Paper Mill. 47, No. 15, 60-236 (Apr. 14, 1923).-A.P.-C.

K-10 Ten Difficulties Experienced in Engine Sizing. E. C. TUCKER. **Paper Trade J.** 76, No. 18, 47-49 (May 3, 1923). — An address on the troubles caused by hard water, calcium salts in stock, effect of heat, acidity of back water, soft white shavings, fillers, hot dryers, suction, heating the stock, and damp paper, with suggestions as to how to overcome them, followed by a general discussion of the points brought out by the author.-A.P.-C.

K-10 Sizing of Paper. H. TH. BOHME. Ger. patent 369,058. **Papierfabr.** 21, 116 (Feb. 25, 1923). Saponifiable fats and oils are used.-J.L.P.

K-10 Sizing of Paper. H. TH. BOHME Ger. patent 364,000 **Wochbl Papierfabr.** 54,617 (Mar. 3, 1923). A colloidal solution of crude montan wax, prepared by treatment with alkali according to Ger. patent 350,622, is used.-J.L.P.

K10 Sizing and Waterproofing. CARL JAGER. Ger. 364,564. **Wochbl. Papierfabr.** 54, 907 (Mar. 31, 1923). Insoluble naphthenates are produced in the beater-J.L.P.

K-10 High Free Rosin Versus Neutral Rosin Size. E. B. BEST, **Paper Ind.** 4, 1394-1395 (Jan. 1923); **Paper Mill.** 47, No. 3, 4, (Jan. 20th, 1923). A brief discussion of the relative merits of high free rosin and neutral rosin size, showing that no general rule can be laid down. Good results have been obtained with high free rosin, low free rosin and neutral size, and each case must be judged on its own merits.-A.P.-C. (See **Pulp and Paper** 20, 699 (Aug. 17, 1922); **Paper Trade J.** 75, No. 4, 53 (July 27, 1922).-A.P.-C.

K-10 The Colloid Chemistry of Paper Sizing. RUDOLPH LORENZ. **Wochbl. Papierfabr.** 53, 4542 (1922); **Pulp and Paper** 21, 191-192 (Feb. 15, 1923). The author reviews the action of sulphate of alumina in rosin sizing, and suggests that it acts as an "elec trostatic adhesive" which neutralizes the negative charges of the cellulose and rosin, thus preventing the natural repulsion of substances having like charges. He states that it is now possible to size with colloidal rosin prepared by Plauson's process (Frydlender, **Pulp and Paper** 19, 908, 1921, which is purely mechanical, there being no previous cooking with alkali; but he gives no details as to the new process.-A.P.-C.

SALESMEN WILL GROW AND GROW

What the paper mill executives think of the Salesmen's Association of the Paper Industry is given prominence in the newly published special report giving the addresses presented at the April convention, in the printing of the statement made by Philip T. Dodge, president of the International Paper Company at the Salesmen's banquet, in which he said:

"If there is any one thing this dreadful war, just closed has taught the world, it is the need of co-operation — co-operation based on independence in many ways, of nations one upon another, or communities one upon another, also between individuals.

"I believe that the Salesmen's Association of the Paper Industry, founded as it was, moving on the lines that it does, will be of vast importance not only to the paper industry, but through its example, to many of the other industries of the country.

"I congratulate you, gentlemen, on what you have done and I feel that this Association will grow and grow, and that it will be of vast benefit to the country at large."

NINE YEARS OF ACCIDENT PREVENTION WORK

The completion of nine years of Accident Prevention work, throughout the Province of Ontario, presents a record that is particularly interesting.

The fatalities and lesser accidents, within the City of Toronto, may be taken as a fair indication of the conditions in the balance of the Province.

Briefly summarized, the ninth year of safety work has been completed with sixty less fatalities in Toronto than 1913, the year immediately before we started work. This is in spite of an increase in population of 91,000, with its increased proportion of industrial hazards and an increase of 32,000 in automotive vehicles, thus having effected a saving of 759 lives in nine years of safety work, estimated in proportion to the actual increase in population. This is more remarkable when it is borne in mind that automotive vehicles, one of the greatest causes of fatalities, have increased in that time from 5,000 to 37,000 in Toronto. These statistics are for a section covering one-sixth of the population of Ontario.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, June 19. — The past week has been characterized by a slight improvement in the local paper trade, notwithstanding that printers are doing comparatively little. The paper business is influenced by many general conditions, and the dullness in one direction is offset by the briskness in another. Some jobbers report that trade is spotty — that it will be excellent for a time and then it will be quite stagnant. It is certain that the days of mere order-taking are gone, business has now to be obtained by going after it hard. In the opinion of one jobber, more of it could be secured if the sales forces generally had a little more imagination, although probably the salesmen would not agree with this view.

The mills report a trifling decrease in the volume of orders, but they are still well employed, export business being in a fair scale. If the reciprocity tariff with Australia goes through, we may hope for a substantial addition to our overseas trade.

The newsprint position is unchanged. The heavy calls on the mills are indicated by the fact that that in May the production of Canadian mills totalled 110,252 tons, the largest amount on record for any month. This compares with 106,361 tons in March, which previously held the record. The general outlook is very satisfactory, and even if the demand falls off a little, the mills will still be pretty busy.

A fair amount of trade is being done in other departments. Books, bonds and ledger orders are moderate, while light weight papers have picked up lately. The board mills have not an appreciable amount of business ahead of them; the American producers continue to compete very keenly for some descriptions, which of course tends to depress prices and to divert a certain number of orders to the other side.

With regard to the pulp market, groundwood is also firm, with a good demand, and with supplies none too plentiful. Sulphite is in fair request. Bleached is being well bought, prices ranging from $90.00 to $100, according to grade. The statistical position of chemical pulp is good, the stocks on hand being very small. These stocks have gradually diminished, and the case of bleached totals about three days' production, while for all descriptions the stocks total about nine days' production.

Toronto Market News

Business in pulp and paper circles continues rather light and neither the mills nor the paper merchants are showing any disposition to pile up stocks which, in most cases, are of small dimensions. Buying is from hand to mouth for the most part, although the paper mills are running fairly full and are disposing of their product quite readily both in the domestic and export markets. Jobbers complain that business with them has not picked up to the extent anticipated at this time and as the usual summer period of light sales is about due it is hardly thought that conditions will improve materially until after the holiday season. The bright spot from a manufacturing standpoint is the newsprint industry which might be said to be booming. Plants are working at practically full capacity and the demand is sufficient to keep surplus stocks down. So great has been the growth of mill capacity in Ontario and Canada as a whole that, while the danger of over-expansion does not appear imminent, there are those who point to such a possibility. It is suggested that as long as prosperous conditions exist in the United States, which is our chief export market, there will be plenty of business for the Canadian mills but should a period of commercial depression develop Canadian mills would be forced to operate much below capacity. Such a contingency, however, is not anticipated in the trade although the cautious ones are pointing it out as a possibility to be guarded against.

PULP. — The demand for pulp has fallen off a bit although there is still some activity in groundwood, the price still being around $36.00. Even in groundwood there has been a diminishing demand. Prices of all lines of pulp remain unchanged and mills appear to be buying nothing beyond their immediate requirements.

PULPWOOD. — Contracts for wood in Northern Ontario are now pretty well closed up by buyers and settlers who are busy cutting, this being the height of the season in these activities. It is stipulated by most purchasers that all wood must be peaeled. Prices remain about the same except as regards poplar which is commanding from $1 to $1.50 per cord more than last year. Ample pulpwood is being offered, except poplar, for which there is a heavy call. While the mills are not buying any more wood than is sufficient to meet their requirements, there is no speculative buying or loading up on the part of concerns who are willing to take a chance on future developments, recalling the rather bitter experience of having huge stocks on hand in 1920 when the slump came, when they had to write off heavy losses on their wood piles.

RAG AND PAPER STOCKS. — According to Toronto rag and paper stock dealers the judgment of the United States Supreme Court declaring the Armstrong Bureau in Chicago an illegal concern is likely to have the effect of advancing the price of waste paper and there may be a coincident drop in the price of board. Just now the price of board is holding firm despite the fact that waste paper has been dropping in price. Should board prices drop there will be a decrease in box board cuttings. Rag stock is moving in fair quantities although there is no great demand. All that the dealers are receiving, however, is being disposed of. The following prices prevail: No. 1 hard white shavings, $4.00 per 100 lbs.; No. 1 soft white shavings, $3.30; heavy books and magazines, $2.30; ledgers and writings, $2.50; No. 1 kraft, $2.50; newspapers, $1.30; No. 1 mixed papers, $1.00; No. 1 misc, 90c; No. 2, misc., 70c.; No. 1 white shirt cuttings, $13.00; fancy shirt cuttings, $6.74; canton flannels, bleached, $10.00; white lawns, $9.00; blue overall cuttings, $6.75; No. 1 manila rope, $6.55; mixed strings, $1.25,

NEW YORK MARKETS

New York, June 16. — Special Correspondence. — There are concrete signs of increased quietness in numerous parts of the paper industry. The falling away of demand is regarded as nothing more than seasonal, and, when all is said and done, it is commonly admitted by manufacturers and jobbers that current business in paper is of broader dimensions than is ordinarily the case at this time of the year. Dullness is more apparent in the raw material branch of the industry than at the manufacturing end. Most descriptions of papermaking material are in slack demand at present; this applies to wood pulp, rags, waste paper and, in fact, to about every commodity entering into the making of paper and board. Mills are purchasing raw stock carefully, limiting their orders almost entirely to goods actually and immediately required, and yet reports tell of a fairly consistent movement of finished paper of most kinds into consuming channels. It is true transient demand has subsided to a marked degree but contract business is good and a majority of paper manufacturers have enough contracts on file to warrant the operation of their plants at a fair rate of capacity.

The fact that current demand for paper has slowed down is not worrying members of the trade. The situation is viewed as purely a seasonal one, and expressions of confidence are made in various corners of the trade that business will revive in due time. Jobbers are not as busy as they were because transient customers have reduced their buying, if not in the number of orders then in the volume of paper ordered. Demand upon mills consequently is not as heavy, yet instances where manufacturers have curtailed production are more of an exception than the rule, though some have of course let down in their operations while compiling mid-year inventories and making needed repairs to equipment.

The price tone is steady. No changes of note have occurred in quotations and there seems little probability of any material fluctuations even should demand ease off further. Paper prices are today on levels comparing most favorably with the cost of production; manufacturers have done everything possible to keep from advancing quotations and to maintain prices on a stable basis, and a seasonal quieting of the market is not likely to result in disturbing prices from their present healthy position. There may be trifling declines during the summer months, depending on the market condition prevailing for the different kinds of paper, but prospects are for no broad changes in price levels for sometime to come.

The newsprint market continues firm. There has been no slackening of demand for this description of paper; if anything, publishers are just as anxious for supplies as hitherto and mills are running at a rapid clip and are provided with a ready outlet for about all of the paper produced. Prices are strong, and spot lots of print paper are frequently commanding premiums in the open market since a majority of mills have their full output sold on contract and therefore have but little supply to direct to transient buyers.

A feature of the market has been a spurt of demand for tissue paper. Buyers have been actively in evidence for both white and manila tissue, and some good-sized orders have been placed during the past few days. Prices rule steady at around 90 cents a ream for No. 1 white tissue, 20 x 30 basis, and at about 80 cents for No. 2 white and No. 1 manila, 24 x 36 basis, f.o.b. New York.

Coarse papers are in less call but manufacturers as a rule are well fixed with contracts and are shipping out their product freely. No. 1 domestic kraft is quoted at about 7 cents a pound f.o.b. New York, with the No. 2 grade quoted at 6 cents on an average. A hearing was held in Washington this week on the claim that Norwegian manufacturers were dumping kraft wrapping paper imports.

Fine papers are in a quieter market position. Demand is for smaller quantities and it is reported that some mills in New England have reduced their production of at least certain lines of bonds, ledgers and writings. However, prices hold firm and there is no sign of any impending changes.

Board prices moved down another peg this week. Early in the week Eastern mills were quoting $60 a ton f.o.b. New York on news board and $57.50 on plain chip, but toward the middle of the week several manufacturers cut prices to $57.50 on news and $55 on chip. In certain instances the same quotation was named on news board as on chip. Generally speaking, demand for board is fair. Paper box manufacturers are buying cautiously, ordering only against direct requirements, yet mills in this part of the country are running five days a week and seem to be marketing their product without a whole lot of difficulty. The decline in prices appeared to be largely a matter of sharp recessions in raw material costs, thus enabling board manufacturers to produce board at cheaper prices.

GROUND WOOD.— Some reports have told of a little better demand for mechanical pulp, and, judging from all the advices in hand, there is a moderately large movement of supplies toward consumers. However, it is plainly apparent that buyers are proceding in a cautious manner, generally confining their purchases to pulp immediately needed, and many of them having their present wants so well covered that they are enabled to keep out of the market for days at a time. Ground wood quotations appear to have steadied at around the $35 a ton level f.o.b. grinding plants for prime spruce pulp for prompt shipment. Perhaps some supply is being secured at slightly under this price but the probabilities are that the great bulk of ground wood being sold currently is fetching this price or a trifle better. Grinding operations are on a fairly large scale and this results in bigger amounts of pulp being available, though producers are said to be storing any surplus they have to tide them over the dry season which usually develops in the late summer.

CHEMICAL PULP.— The buyers' strike in chemical wood pulp continues. There is a lack of important demand in evidence except against pressing requirements, and paper mills in various parts of the country are absorbing pulp in a way that makes for a quiet market tone. The same tendency to hold aloof from purchases which has been noted for some time exists, and transactions involving sizeable amounts of pulp are few and far between. The price condition might be correctly described as "nervous." Importers view matters with much confidence and insist that prices will hold firm throughout the summer, owing to strong markets at primary sources abroad, yet instances are cropping up from day to day where papermakers have succeeded in buying pulp at slight concessions, indicating that sellers are anxious enough for business to concede something in the way of price.

Unbleached sulphite and kraft pulp appear to be

relatively steadier than other grade. Prime unbleached sulphite of foreign origin is quoted at around 3.40 cents per pound ex dock New York, and Scandinavian kraft at 3.35 cents on the dock, with only occasional sales reported at below these levels. On the other hand, bleached sulphite seems to be weakening. Domestic producers continue to quote 5 cents for prime bleached at pulp mills, and imported bleached sulphite is quoted at 4.50 to 4.75 cents for the No. 1 grade and at about 4.25 cents for No. 2 quality. However, sales at cheaper figures are reported from time to time. Bleached soda pulp is quotably steady at about 4.25 cents per pound f.o.b. pulp mills and most domestic manufacturers are said to be well sold up on this pulp.

RAGS.— The papermaking rag market is characterized by considerable easiness. Demand for all grades is slow and the movement of prices is downward, and there is no indication that the bottom levels have yet been reached in spite of the fact that some sharp declines have occurred in the past few weeks. New cuttings are wanted in very small lots. Writing paper mills are buying in strict hand-to-mouth fashion and seen to be getting the rags desired at virtually their own prices; old whites and blues are largely neglected and are tending off in value, while roofing rags have scored further declines in a market exhibiting practically no life whatsoever. Sales have been reported of No. 2 roofing stock at close to a cent per pound f.o.b. New York, and No. 1 packing is bringing only around 1.25 cents at dealers' shipping points. New No. 1 white shirt cuttings are offered at 12.50 cents a pound New York without attracting many buyers, and washables are available to mills at 4.75 cents per pound, new unbleached muslins at 11.25 cents, new light silesias at 8 cents, and fancy shirt cuttings at 6 cents. Thirds and blues have eased off to about 2.75 cents a pound for choice repacked stock at shipping points, and 2 cents for miscellaneous packing.

PAPER STOCK.— Down and down go prices of waste paper. Further declines, in some cases of rather broad dimensions, have been noted this week, and prices have worked off to levels where dealers claim collections are being halted owing to the lack of profit in gathering old paper at prevailing market values. No. 1 mixed paper has sold at 70 cents a hundred pounds f.o.b. New York, city mixed at 50 cents, and old folded newspapers at 80 cents; in fact, there have been reports of sales at even lower prices. Flat stock is quoted by New York dealers at 1.65 cents a pound for heavy No. 1 magazines, and 1.40 cents for mixed books, while ledger stock is selling at around 1.85 cents per pound or less New York. Shavings also have declined. No. 1 soft white shavings have been bought by consumers at 3.15 cents a pound f.o.b. New York, and No. 1 hard white at 4 cents. Old kraft paper is one of the steadiest items in the market, and is bringing close to 2 cents a pound at dealers' shipping points.

OLD ROPE AND BAGGING.— There is not much demand from paper mills for old rope and prices display a sagging trend. Around 6 cents a pound at shipping points is the basis asked by dealers for No. 1 domestic manila rope, but sales undoubtedly have been made at cheaper figures, while foreign old rope is worth less than the domestic article. Old bagging is dull and quotably easy. No. 1 scrap burlap is freely available at 1.15 to 1.25 cents a pound at dealers' points, and bagging has sold to roofing paper mills at 70 cents a hundred pounds f.o.b. New York.

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WISE MEN AND THEIR MONEY

By R. W. McNeel

In (The Paper Dealer)

As service is at the foundation of all money-making, so thrift is at the foundation of all investment. Down through the ages perhaps more essays have been written, more lectures delivered, more wise saws propounded, on the necessity for and benefits to be derived from thrift than on any other one subject.

The thrifts campaigns of today, carried on by such institutions as the insurance companies and the savings banks, generally appeal to the fears or the cupidity of men. In appealing to fears they portray the financial condition of the average man at various stages of his career as revealed by statistics.

Behind all the thrift sermons and campaigns is this economic and financial philosophy and fact—no one can become wealthy by labor alone. Fortunes are created by the labor of brain and hand only when supplemented by the productive powers of capital. The only way capital is created is by individuals creating more wealth than they consume. The money a man receives for his labor represents the reward organized society gives him for its services and is just so many tickets entitling him to draw on the world's supply of goods for the equivalent of what he has produced. If he spends all his money it merely means that he is drawing on the world for all it owes him. He is consuming all he creates. It is only in so far as he spends less than he earns or consumes less than he creates that he can acquire capital to supplement his creative power of labor. That is thrift. There is no other way to get capital unless it is inherited or stolen.

Failure to distinguish between various kinds of efforts is more frequently the cause of loss of money than any other. If one could canvass the people who put their funds into the thousand and one fake or financially unsound schemes by which they were relieved of their money in the last year he would find that most of them thought they were investing.

Some seem to think whenever they give up their money in return for any stock certificate or any bond, they are making an investment. They say, "I have invested my money in X. Y. Z. oil," or "I have invested my money in P. D. Q. Radio," whereas the so-called securities they have received in return for their money do not contain a single element a real investment must have. Others seem to think if they pay for stocks or bonds outright they are investing, whereas if they purchase them on margin, that is largely with borrowed money, they are speculating.

Thousands of people have been stampeded into putting their funds into various radio promotions in the last few years, in the hope of duplicating the financial success of those who gambled in American Bell Telephone industry. Most of them think they are investing.

One must adopt some definite standards of measurement to determine whether he is investing his money, is speculating with it, or is gambling.

SAFETY FIRST!

Never depend on the other fellow to prevent an accident. His vision may be obstructed, or something may happen to distract his attention and you may be injured.

Do more than your share to avoid accidents to yourself and others.

Wood Pulp Trading Co., Ltd.

501 FIFTH AVENUE,

NEW YORK CITY

WOOD PULP AGENTS

WHO SAYS CHINA IS BACKWARD?

The China Electric Company is now installing a wireless telephone system between Peking and Tientsin. The company has an understanding with the Ministry of Communications that if the project proves successful, it will sell the system to the Ministry.

To sneer and denounce is a very easy way of assuming a great deal of wisdom and concealing a great deal of ignorance.

Tenders for Pulpwood and Timber Limit.

Tenders will be received by the undersigned up to and including the 22nd of June, 1923, for the right to cut pulpwood and timber on a certain area situated in the watershed of the Trout and Chapleau Rivers in the districts of Sudbury and Algoma, comprising an area of 1,049 square miles.

Tenderers shall state the amount per cord on pulpwood that they are prepared to pay as a bonus in addition to dues of 80 cents per cord for spruce and 40 cents per cord for other pulpwood, or such other rates as may from time to time be fixed by the Lieutenant-Governor in Council, for the right to operate a Kraft pulp mill and a paper mill.

Tenderers shall also be required to say what they are prepared to pay, per thousand feet Board measure, for the following classes of timber, over and above the upset prices in addition to Crown dues:

Red and White Pine — Upset price	— $6.00 per M. ft. B. M.
Spruce (too large for pulpwood)	— $5.00 per M. ft. B. M.
Jackpine (banksian)	— $2.50 per M. ft. B. M.

The Crown dues on Pine including Jackpine being $2.50 and on Spruce $2.00 per M. ft. B. M., or such other rates as may from time to time be fixed by the Lieutenant-Governor in Council.

The successful tenderer shall be required to erect a mill or mills within the limit or at some point in Ontario approved by the Minister, and to manufacture the wood into Kraft pulp, and also such portion thereof into Kraft paper when required so to do.

Parties making tenders will be required to deposit with their tender a marked cheque, payable to the Honourable the Treasurer of the Province of Ontario, for fifty thousand dollars ($50,000), which amount will be forfeited in the event of the successful tenderer not entering into agreement to carry out conditions, etc.

The said $50,000 shall remain on deposit until the Kraft pulp mill, as provided by terms and conditions of sale, is erected and in operation. Any timber cut in the meantime shall be subject to payment of dues and bonus as accounts for same are rendered. After the said pulp mill is erected and in operation the deposit of $50,000 may be applied on account of bonus dues as they accrue, but the regulation dues as mentioned above shall be paid in the usual manner as returns for cutting of wood and timber are received and accounts rendered.

The highest or any tender not necessarily accepted.

For particulars as to description of territory, capital to be invested, etc., apply to the undersigned.

All tenders should be enclosed in sealed envelopes and marked plainly on outside "Tender for Trout-Chapleau Pulp and Timber Limit."

BENIAH BOWMAN,
Minister of Lands and Forests.

Toronto, April 16th, 1923

N. B. — No unauthorized publication of this notice will be paid for.

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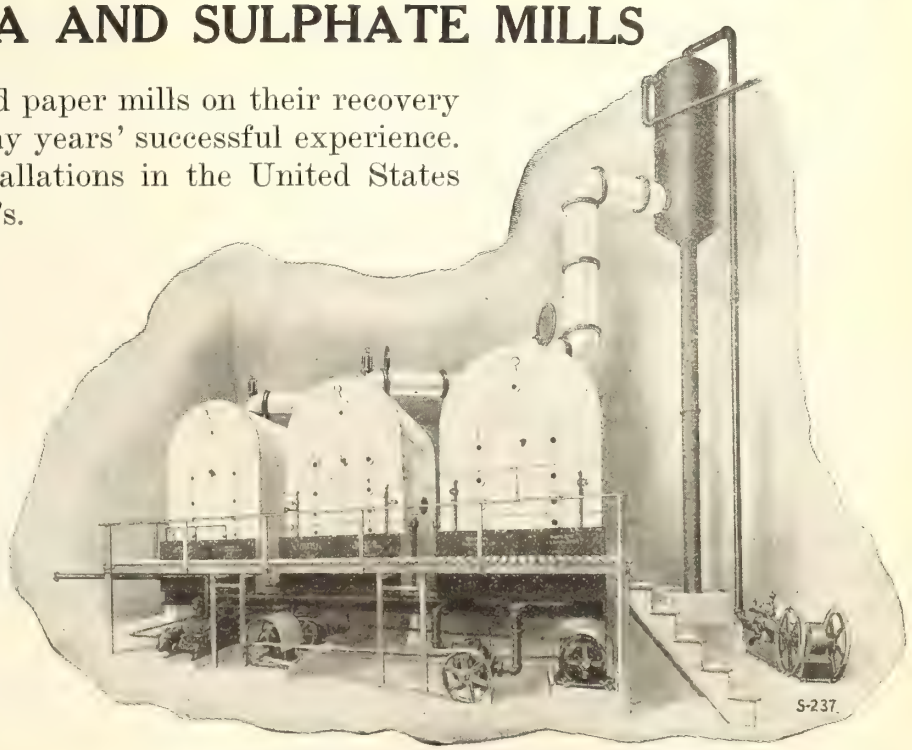
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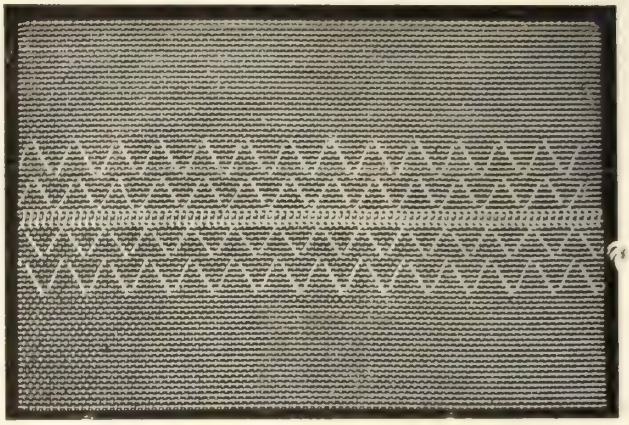
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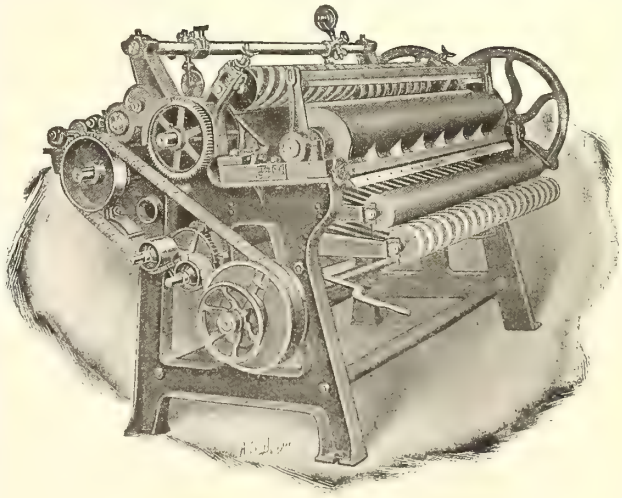
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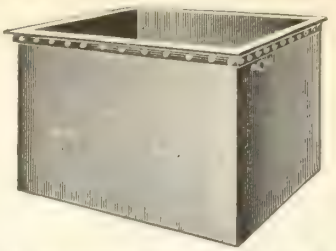
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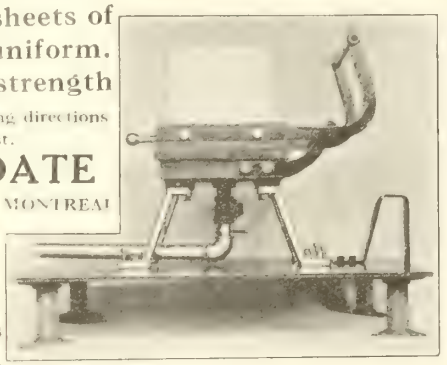
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Buyers who are unable to find in the classification here given such machinery or supplies as they desire are invited to write Service Department, Pulp and Paper Magazine, Gardenvale, ueQ., who can, in all probability, refer them to proper sources.

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Waterous Engine Works, Co., Ltd.

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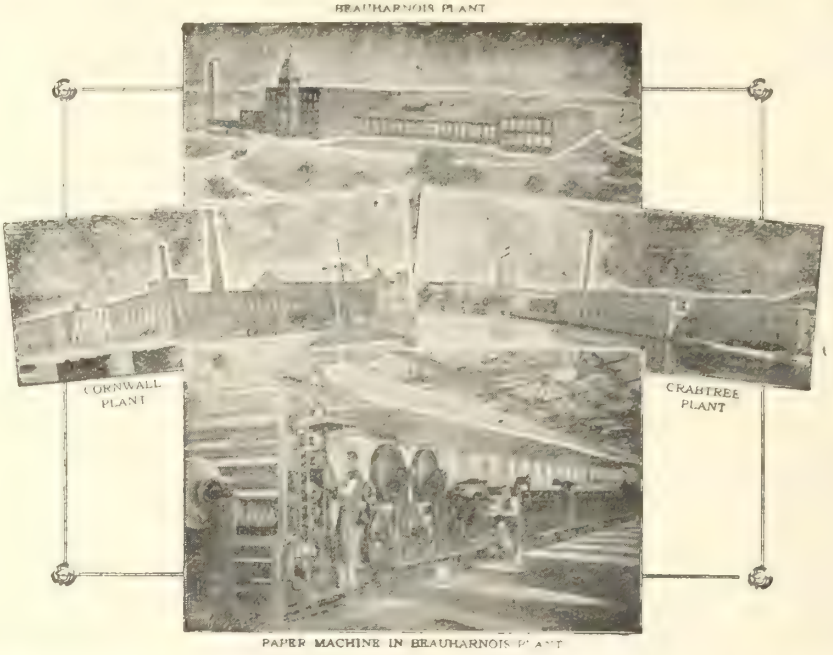
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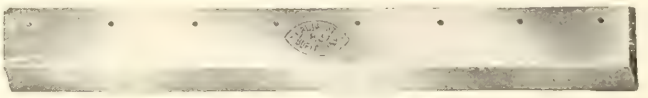
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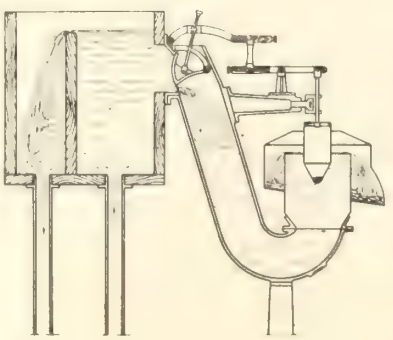
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Pulp and Paper Mill Accessories, Ltd.
Sherbrooke Machinery Co., Ltd.
Walmesley, Charles & Co., Ltd.
Waterous Engine Works, Co., Ltd.
Westbye, P. P.

Separators — Oil:
Canadian Fairbanks-Morse Co., Ltd.
Goldie & McCulloch Co., Ltd.

Separators — Steam:
Canadian Fairbanks-Morse Co., Ltd.
Crane Co., Ltd.
Peacock Bros., Ltd.

Shafting:
Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works Ltd.
Northern Foundry & Machine Co., Ltd.
Waterous Engine Works, Co., Ltd.

Sheet Lead:
The Canada Metal Co., Ltd.

Sheets—Copper, Brass and Bronze:
McAvity & Sons, Ltd., T.
Tallman Brass & Metal, Ltd.

Sheet Samplers:
John Date.

Shingle Machines:
Canadian Fairbanks-Morse Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.

Shower Pipes:
Dominion Engineering Works, Ltd.
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.

Shredders:

Size:
Vera Chemical Co., Ltd.

Slab Chippers:
Boving Hydraulic & Eng. Co., Ltd.
Waterous Engine Works, Co., Ltd.

Slitters and Re-Winders:
Bertrams, Ltd.
Cameron Machine Co.
Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Langston Co., Samuel M.
Morrison, The J. L. Co.
Ticonderoga Machine Works.
Walmsley, Charles & Co., Ltd.

Slitting and Roll-Winding Machines:
Cameron Machine Co.

Sinks & Tops—Laboratory, Acid Proof:
Alberene Stone Co.

Smelter Lining:
Alberene Stone Co.
Beveridge Supply Co., Ltd.

Smoke Stacks:
Can. Des Moines Steel Co., Ltd.
Dominion Engineering Works, Ltd.
Hamilton Co., Wm.
Hendrick Manufacturing Co.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
The Steel Trough & Machine Co., Ltd.
Waterous Engine Works, Co., Ltd.

Snow Plows:
Canadian Equipment Co., Ltd.

Soda Ash:
Wilson, Paterson Co.

Soot Cleaners:
Beveridge Supply Co., Ltd.

Solder:
Canada Metal Co.
McAvity T. & Son.
Tallman Brass & Metal, Ltd.

Spiral Conveyors:
Canadian Fairbanks-Morse Co., Ltd.
Can. Link-Belt Co., Ltd.
Waterous Engine Works, Co., Ltd.

Splicing Tissue:
Bemis Manufacturing Associates.

Splitters:
Hamilton, William Co., Ltd.

Split Pulleys—Wood and Steel:
Canadian Fairbanks-Morse Co., Ltd.
Waterous Engine Works Co., Ltd.

Sprinkler Tank:
Can. Des. Moines Steel Co., Ltd.
Hendrick Manufacturing Co.

Sprocket:
Canadian Fairbanks-Morse Co., Ltd.
Can. Link-Belt Co., Ltd.
Hamilton Gear & Machine Co.
Hamilton, William Co., Ltd.
Northern Foundry & Machine Co.
Waterous Engine Works Co., Ltd.

Stacks:
Dominion Engineering Works, Ltd.
Hamilton, William Co., Ltd.
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.

Stackers:
Canadian Link-Belt Co., Ltd.

Tanks — Iron and Steel:
MacKinnon Steel Co., Ltd.
Walsh Plate &Structural Works, Ltd.
Waterous Engine Works, Co., Ltd.

Steam Appliances:
Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
McAvity, T. and Son.
Pulp & Paper Mill Accessories, Ltd.
Waterous Engine Works, Co., Ltd.

Steam Engines:
Port Arthur Shipbuilding Co., Ltd.
Sturtevant Co. of Canada, Ltd., B. F.
Walmsley, Charles & Co., Ltd.

Steam Regulator:
Beveridge Supply Co., Ltd.
Crane Co., Ltd.
McAvity, T. & Son.

Steam Specialities:
Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Crane Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.
Waterous Engine Works Co., Ltd.

Steam Shovels:
Canadian Equipment Co., Ltd.

Steel Barrels:
Dominion Engineering Works, Ltd.

Steel Factory Equipment:
Steel Trough & Machine Co., Ltd.

Steel Plate Construction:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.

Steel Storage Tanks:
Steel Trough & Machine Co., Ltd.

Steel Shop Boxes:
Steel Trough & Machine Co., Ltd.

Steam Turbines:
Canadian Fairbanks-Morse Co., Ltd.
Goldie & McCulloch Co., Ltd.
Sturtevant, B. F. Co. of Canada, Ltd.

Stokers—Mechanical:
Babcock & Wilcox, Ltd.
Combustion Engineering Corporation, Ltd.
The Under-Feed Stoker Co. of Canada, Limited.

Stones—Pulp:
American Stone Co.
Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
International Pulp Stone Co.
Lombard & Co.
Miramichi Quarry Co.
Pulp & Paper Mill Accessories, Ltd.
Smallwood Stone Co.
Smallwood-Low Stone Co.

Stoneware—Chemical, Acid-Proof:
Alberene Stone Co.
Beveridge Supply Co., Ltd.

Stop Log Winches:
Dominion Engineering Works, Ltd.
Hamilton Co., Wm.
Northern Foundry & Machine Co., Ltd

Strainers—Water:
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Babcock & Wilcox, Ltd.

Straw Cutters:
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Can. Des Moines Steel Co., Ltd..
Dominion Engineering Works, Ltd.
MacKinnon Steel Co., Ltd.

Structural Steel Works:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.
Walsh Plate & Structural Works, Ltd.

Stuff Chests:
Can. Des Moines Steel Co., Ltd.
Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co., Ltd.

Suction Rolls:
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Hydraulic Machinery Co., Ltd.

Sulphate of Alumina:
H. D. Pochin & Co., Ltd.
Gottesman, M. & Co., Inc.
Imperial Trading Co.
The Kalbfleisch Corporation.
Wilson—Paterson Co.

Sulphite Mill Equipment:
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Beveridge Supply Co., Ltd.
Dominion Engineering Works, Ltd.
Hamilton, William Co., Ltd.
Hydraulic Machinery Co., Ltd.
MacKinnon Steel Co., Ltd.
McAvity, T. & Son.
Port Arthur Shipbuilding Co. Ltd.
Walsh Plate & Sttructural Works, Ltd
Waterous Engine Works, Co., Ltd.

Sulphite Pulp:
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Sulphate Mill Equipment:
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Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Hamilton, William Co., Ltd.
MacKinnon Steel Co., Ltd.
McAvity, T. & Son.
Port Arthur Shipbuilding C,o Ltd.
Stebbins Eng. & Mfg. Co.
Texas Gulf Sulphur Co.
Walsh Plate & Structural Works, Ltd.
Waterous Engine Works, Co., Ltd.

Sulphite Mitscherlich:
M. Gottesman & Co.

Sulphur:
Union Sulphur Co.
Texas Gulf Sulphur Company.

Sulphur Burners:
Hydraulic Machinery Co., Ltd.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Stebbins Eng. & Mfg. Co.
Walsh Plate & Structural Works, Ltd
Waterous Engine Works Co., Ltd.

Superheaters—Steam:
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Canadian Fairbanks-Morse Co., Ltd.
Goldie & McCulloch Co., Ltd.

Switchboards:
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Canadian General Electric Co., Ltd.
Harland Eng. Co., Ltd.
Northern Electric Co., Ltd.

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Can. Des Moines Steel Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Canadian Pine Co., Ltd.
Dominion Engineering Works,. Ltd.
Goldie & McCulloch Co., Ltd.
Goold Shapley & Muir Co., Ltd.
Hamilton, Wm. Co., Ltd.
Hendrick Manufacturing Co.
Ontario Wind Engine and Pump Co. Ltd.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Pacific Coast Pipe Co., Ltd.
Reed Co., Ltd., Geo. W.
The Steel Trough & Machine Co., Ltd.
Toronto Iron Works, Ltd.
Victoria Foundry.

Tanks—Acid:
Hendrick Manufacturing Co.
White, W. H.
Walsh Plate & Structural Works, Ltd.

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Barber, W. J. & Co.

Laurentide Company,

Limited

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Sulphite Pulp
Newsprint Paper
Pulp Board

Abitibi Power and Paper Company,

Limited

Head Office: MONTREAL, Que.,

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Manufacturers of

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Port Arthur Shipbuilding Co., Ltd.

Tanks — Welded:
Can. Des Moines Steel Co., Lttd.
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.

Tanks — Ore:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.
Waterous Engine Works, Co., Ltd.

Tanks — Storage:
Hendrick Manufacturing Co.
Ontario Wind Engine and Pump Co. Ltd.
Port Arthur Shipbuilding Co., Ltd.

Tanks — Wood:
Canadian Pipe Company, Ltd.
Goold Shapley & Muir Co., Ltd.
Pacific Coast Pipe Co.
Ontario Wind Engine and Pump Co. Ltd.
Port Arthur Shipbuilding Co., Ltd.
White, W. H.

Telephone—Automatic:
Northern Electric Co., Ltd.

Telephone—Apparatus:
Northern Electric Co., Ltd.

Temperature Controllers:
The Bristol Co.

Temperature Instruments:
The Bristol Co.
Canadian Fairbanks-Morse Co., Ltd.

Testers—Green Stock:
John Date.

Tanks, Steel, Pressure and Storage.
Hendrick Manufacturing Co.

Timberland Brokers:
Crittsinger, Burt C.
Can. Woodland & Pulp Agency.
Lacey, James D. & Co.

Thermometers:
The Bristol Co.
Canadian Fairbanks-Morse Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.

Thrust Bearings:
Canadian Fairbanks-Morse Co., Ltd.
Kingsbury Machine Works.

Tissue— Splicing:
Bemis Manufacturing Associates.

Towers:
Horton Steel Works, Ltd.
Hendrick Manufacturing Co.
Walsh Plate & Structural Works, Ltd.

Tower Linings:
Beveridge Supply Co., Ltd.
Stebbins Eng. & Mfg. Co.

Transformer:
Northern Electric Co., Ltd.

Transmission Machinery:
Boving Hydraulic & Engineering Co. Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Can. Link-Belt Co., Ltd.
Hamilton Co., Ltd., Wm.
Port Arthur Shipbuilding Co., Ltd.
Renold of Canada, Ltd., Hans.
Waterous Engine Works, Co., Ltd.

Traps—Steam:
Can. Johns-Manville Co., Ltd.
Canadian Fairbanks Morse Co., Ltd.
Crane Co., Ltd.
Goldie & McCulloch Co., Ltd.
Sturtevant, B. F. Co. of Canada, Ltd.

Travelling Cranes:
Boving Hydraulic & Eng. Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd
Dominion Engineering Works, Ltd.

Trolleys:
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Canadian Fairbnks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Northern Crane Works, Ltd.
Waterous Engine Works Co., Ltd.

Troughs:
Hendrick Manufacturing Co.

Trucks:
Hamilton Gear & Machine Co.
Canada Fairbanks-Morse Co., Ltd.
Northern Crane Works, Ltd.

Trucks—Pulp:
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.

Tubes—Copper, Brass, Bronze:
Tallman Brass & Metal, Ltd.
McAvity & Sons, Ltd., T.

Tubes Cleaners:
Babcock & Wilcox, Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.

Turbines:
Boving Hydraulic & Eng. Co., Ltd.
Dominion Engineering Works, Ltd.
Goldie & McCulloch Co., Ltd.
Hamilton Co., Ltd., Wm.
Sturtevant Co. of Canada, Ltd. B. F.

Twine:
Beveridge Supply Co., Ltd.
Victoria Paper & Twine Co., Ltd.

Valves:
Canadian Fairbanks-Morse Co., Ltd.
Crane Co., Ltd.
Jenkins Bros., Ltd.
Goldie & McCulloch Co., Ltd.
Hydraulic Machinery Co., Ltd.
McAvity T. and Son.
Northern Foundry & Machine Co.
Port Arthur Shipbuilding Co., Ltd.
The Under-Feed Stoker Co. of Canada Limited.

Vapor Absorption Systems:
Ross, J. O. Engineering Co.

Vats:
Hendrick Manufacturing Co.
White, W. H.

Ventilators:
Can. Sirocco Co., Ltd.
Reed, Co., Ltd., Geo. W.
Sturtevant Co. of Canada, Ltd., B. F.

Warping Machinery:
Russel Brothers

Water Intake Screens:
Canadian Link-Belt Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.

Water Power Plants:
Boving Hydraulic & Eng. Co., Ltd.

Water Supply Systems:
Canadian Fairbanks-Morse Co., Ltd.
Can. Des Moines Steel Co., Ltd.
Goold, Shapley & Muir Co., Ltd.

Water Wheels:
Boving Hydraulic & Eng. Co., Ltd.
Dominion Engineering Works, Ltd.
Hamilton Co., Wm.
McAvity & Sons, Ltd. T.
Northern Foundry & Machine Co., Ltd.

Welding Plants:
Canadian Fairbanks-Morse Co., Ltd.

Wire Cloth for Paper Machines:
Christie, Geo. Ltd.
Capital Wire Cloth Mfg. Co., Ltd.
Johnson Wire Works, Ltd.
Niagara Wire Weaving Co.
Pulp & Paper Mill Accessories, Ltd.
Taylor, Ltd., H. S.
Tippet & Co., Ltd.
Tyler, W. S. Co.
United Wire Works, Ltd.
Westbye, P. P.
Waterous Engine Works Co., Ltd.
Whyte, W.

Wood Preservatives:
Barrett Co., Ltd.
Beveridge Supply Co., Ltd.

Waste:
Bertrams, Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Christie, John Co.

Waterproof Case Lining:
Beveridge Supply Co., Ltd.

Water Filters:
Canadian Ingersoll-Rand Co., Ltd.

Water Tanks:
Can. Des Moines Steel Co., Ltd.
Canadian Pipe Co., Ltd.
Goold Shapley & Muir Co., Ltd.
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.
Pacific Coast Pipe Co., Ltd.
Walsh Plate & Structural Works, Ltd
White, W. H.

Welding:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.

Welding Rods:
Tallman Brass & Metal, Ltd.

Waste Paper:
John C. Christie Co.

West Machines:
Canadian Fairbanks-Morse Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Carthage Machine Co.
Dominion Engineering Works, Ltd.
Eng. & Machine Works of Can. Ltd.
Hamilton, William Co., Ltd.
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Northern Foundry Machine Co., Ltd.
Sherbrooke Machinery Co., Ltd.
Waterous Engine Works Co., Ltd.

Winders:
Canadian Fairbanks-Morse Co., Ltd.
Cameron Machine Co.
Langston Co., Samuel L.
Port Arthur Shipbuilding Co., Ltd.
Ticonderoga Machine Works.

Wire Cloth:
The Johnson Wire Works, Ltd.

Wiring Devices:
Northern Electric Co., Ltd.

Wood Stave Pipes:
Canadian Pipe Co., Ltd.
Pacific Coast Pipe Co., Ltd.
White, W. H.

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Fourdrinier Wires--Pulp Stones--Digester Brick--etc., etc.

PAULSON ACID SYSTEM

Efficient and Large Capacity

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ELECTRICAL BOILERS

SURPLUS POWER PROBLEMS INVESTIGATED AND REPORTED ON

DIESEL, SEMI DIESEL ENGINES, STATIONARY & MARINE

THE MOST SERVICEABLE and ECONOMICAL for TUG BOATS

Mail your Enquiries to

Pulp & Paper Mill Accessories, Limited

170 McGILL STREET, MONTREAL

The Spanish River Pulp and Paper Mills, Ltd.

SAULT STE MARIE

CANADA

DAILY CAPACITY
680 TONS NEWSPRINT
640 TONS GROUND WOOD
290 TONS SULPHITE
35 TONS BOARD

MILLS AT
SAULT STE MARIE, ONT.
ESPANOLA, ONT.
STURGEON FALLS, ONT.

The largest producers of News Print paper in the Dominion of Canada

RELPH, DARWEN & PEARCE

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LONDON, E.C. 2
(*Established* 1894)

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WOODPULP
and TIMBER

We are open to act as Agents for Manufacturers and Shippers of the above. We are also prepared to import for own account.

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Good Equipment — Low Prices

Direct Current Generators and Motors
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Alternating Current, 60 & 25 Cycle,
Generators and Motors, All Sizes,
New and Used
ALL GUARANTEED
Yes, we can install, too

THE INDUSTRIAL ENGINEERING CO.
OF CANADA, LIMITED

Consulting Engineers TORONTO — Electrical Equipment Experts ONTARIO

— THE —

BLACK - CLAWSON
COMPANY

HAMILTON, OHIO · U.S.A.

Build the PAPER MACHINERY that reduces the COST, increases PRODUCTION and produces PAPER or BOARD of SUPERIOR quality. — *Inquire and let us tell you why.*



EXCHANGE DEPARTMENT

Second Hand Machinery — Business Chances — Wants & For Sale — Positions Wanted — Help Wanted

Advertisements other than "Employment Wanted" or "Employees Wanted" will be inserted in this department at the rate of 20 cents per agate line (14 agate lines make one inch). $2.80 per inch, each insertion, payable in advance. Space measured from rule to rule. When four or more consecutive insertions of the same advertisement are ordered a discount of 25 per cent. will be allowed.

Advertisements of "Wanted Employment" or "Wanted Employees" will be inserted at the rate of two cents a word, net. Cash must accompany order. If box number is used, enclose ten cents extra for postage in forwarding replies. Minimum charge 50 cents.

DRAFTSMAN WANTED preferably mechanical engineer with extensive experience on paper machine design. Reply giving age, education, experience, salary. Apply: Box 591, Pulp & Paper Magazine, Gardenvale, Que.

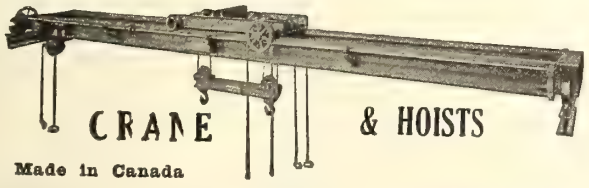
WANTED — Second-hand 3 pocket pulp grinder of standard make in good condition using stone 27" x 54" with Barber pressure pump also Groundwood Wet Machine. Apply giving price, full dimensions and where machinery may be inspected. to Box — 589, Pulp & Paper Magazine, Gardenvale, Que.

DEITCHER BROTHERS
STEADY BUYERS OF
SCRAP IRON, STEEL and METALS
Second-hand machinery, Rails, Motors and Factory Equipment
31-32-33 SHANNON ST. MONTREAL, CANADA
PHONE MAIN 8272

CANADIAN DES MOINES TANKS TRADE MARK
CANADIAN DES MOINES TANKS
& Structural Steel Work
CANADIAN DES MOINES STEEL CO., LTD.
270 INSHES AVE., CHATHAM, ONT. 92 ST. JAMES ST., MONTREAL, QUE.

I KNOW the manufacture newsprint paper; have had 25 years experience, 8 years in present position as Mill Superintendent. For personal reasons, would accept position of Superintendent or Assistant Superintendent. Can furnish best of references.—Address Box 582 Pulp and Paper Magazine, Gardenvale, Que.

TRADE **CAMACHINE** MARK
SLITTERS AND ROLL-WINDERS
WINDERS REWINDERS
CAMERON MACHINE CO. BROOKLYN, N.Y.


CRANE & HOISTS
Made in Canada
NORTHERN CRANE WORKS, LTD., Walkerville, Ont.


Mill Economies
More production less overhead — that is what Sturtevant engineering service gives the pulp industry.
B. F. STURTEVANT CO. of Canada, Ltd.
Montreal Galt Toronto

SCREEN PLATES







The "Union" Bronze (best phosphorized cast metal) Plates for Pulp and Paper Mills. We carry a large stock of blanks of the various sizes and can fill all orders promptly. Old plates reclosed and recut by our process are practically as good as new and give better results than by any other process.
EDWIN C. BABBITT and L. VINCENT WELCH, Sales Agents
UNION SCREEN PLATE CO., OF CANADA LIMITED
FACTORY: LENNOXVILLE, QUE. OFFICES: Lennoxville, Que. Fitchburg, Mass., U.S.A.

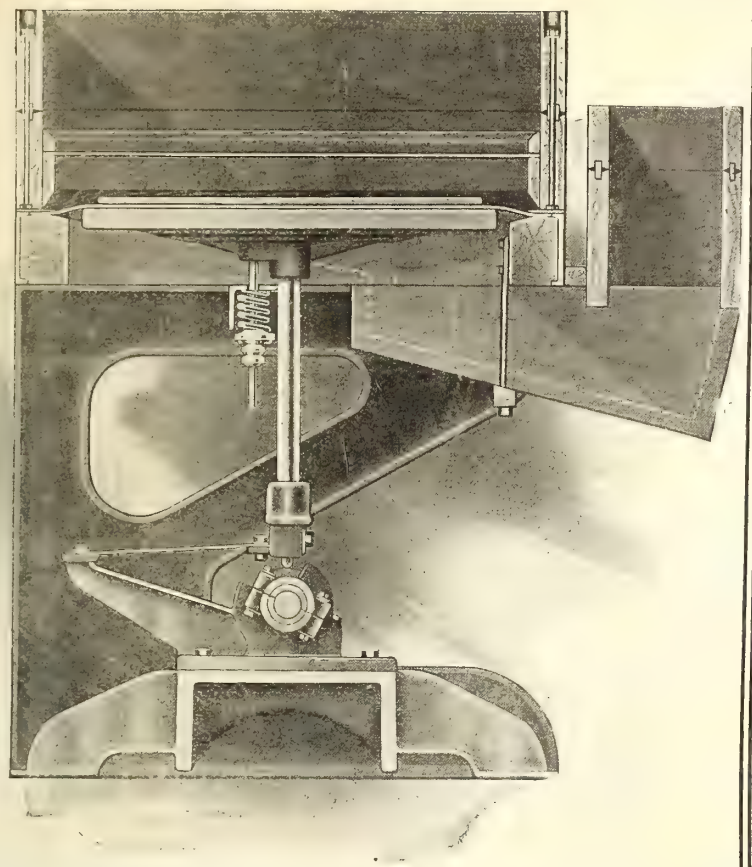
ALPHABETICAL LIST OF ADVERTISERS

See Classified List on Page 73.

Unpaged advertisements appear in every other issue

A

Alberene Stone Co., Ltd. .. .. .



THE
"HYMAC"
LINE

THE ILLUSTRATION SHOWS SECTIONAL END VIEW OF OPEN TYPE END LEG, ALSO LOCATION OF TENSION SPRING, WHICH GIVES COMPRESSION TO WORKING PARTS AT ALL TIMES.

DIAPHRAGM SCREENS

FLAT OR INCLINED TYPE

THE ONLY SYSTEM PRODUCING CLEAN CHEMICAL PULP FOR HIGH GRADE PAPER.

All joints machined, lightest construction, but strongest working parts, practically no tension on springs, friction eliminated, irregular shape of cams, giving a quick upward blast which frees the screen plate slots, and a slow downward suck taking through the maximum amount of stock, thereby increasing the capacity at twenty-five per cent. slower speed

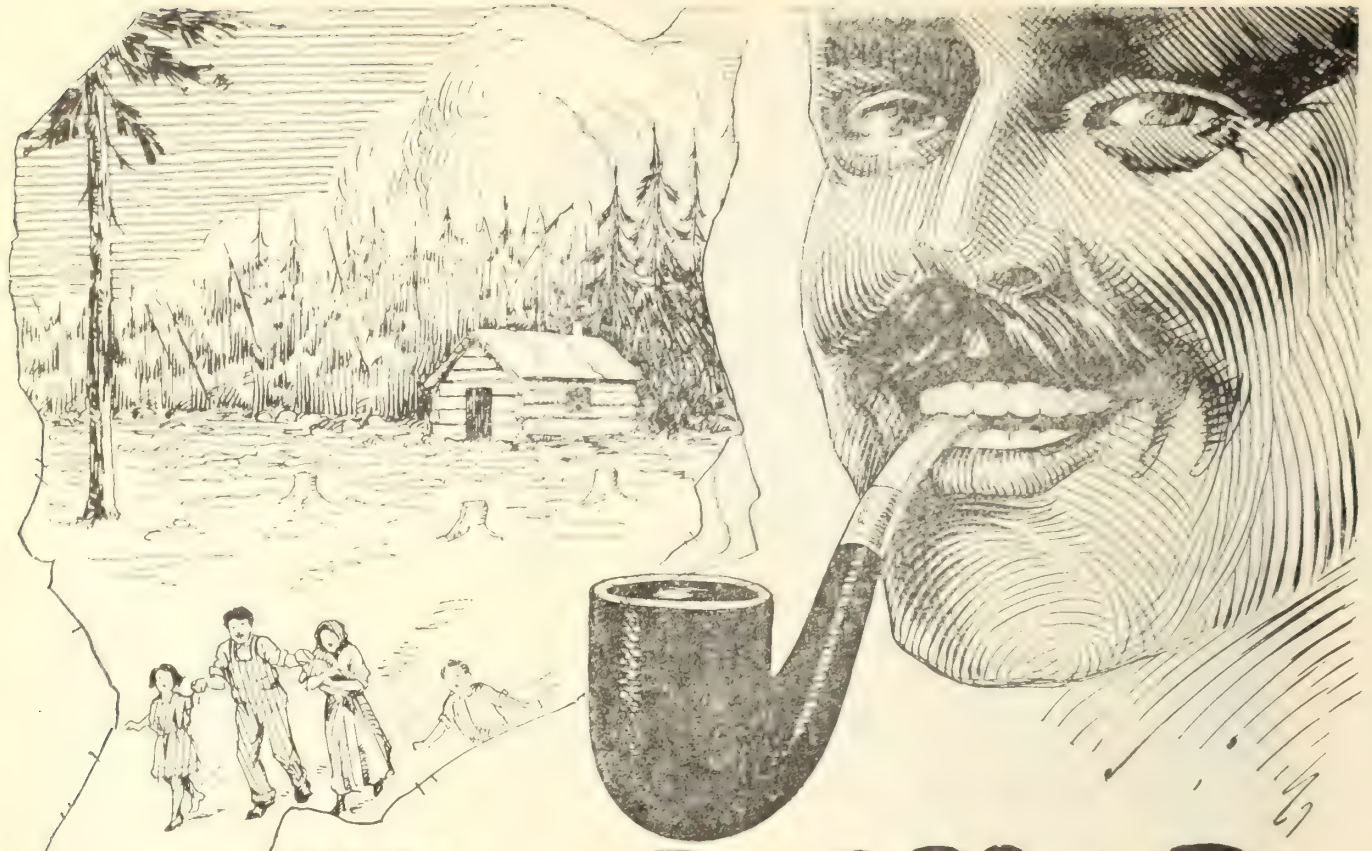
THE INCLINED TYPE	THE FLAT TYPE
SAVES LABOR	LOWER POWER
SAVES PLATES	SLOW RUNNING
SAVES PUMPING	SIMPLE
SHOWER WATER	INCREASED CAPACITY
INCREASED CAPACITY	CLEAN STOCK
CLEANER STOCK	

SCREEN BULLETIN "T"

THE HYDRAULIC MACHINERY CO., LIMITED

MONTREAL CANADA

WESTERN OFFICE
LONDON BUILDING, VANCOUVER, BRITISH COLUMBIA
JAMIESON ENGINEERING CO., IN CHARGE



What Did You Do with That Match?

The suffering and loss caused by forest fires are common knowledge and, yet, carelessness with fire in the forest continues. These forest fires are practically all preventable.

Save Ontario's Forests

They're Yours

Every individual who steps inside the woods should remember he is in the midst of highly inflammable property, for the upper layer of ground in the forest consists of partially rotted wood, which will burn. Lack of consideration for this gave rise to the strenuous situation in Ontario the last week of May and the anxiety for days in some settlements.

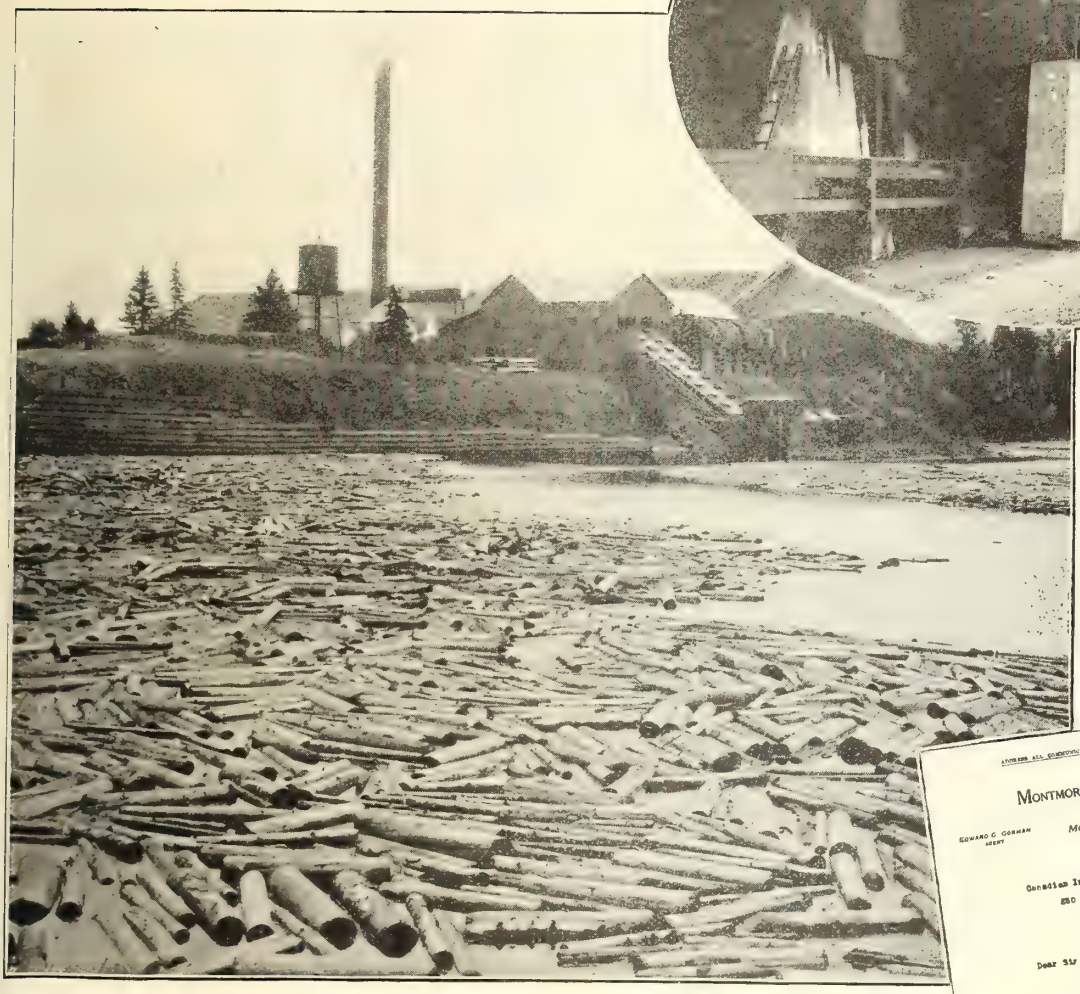
Thoughtlessness or bad judgment or carelessness cause practically all forest fires. Your co-operation, as a citizen, is needed to prevent these fires by taking the same care in the woods as in your own home.

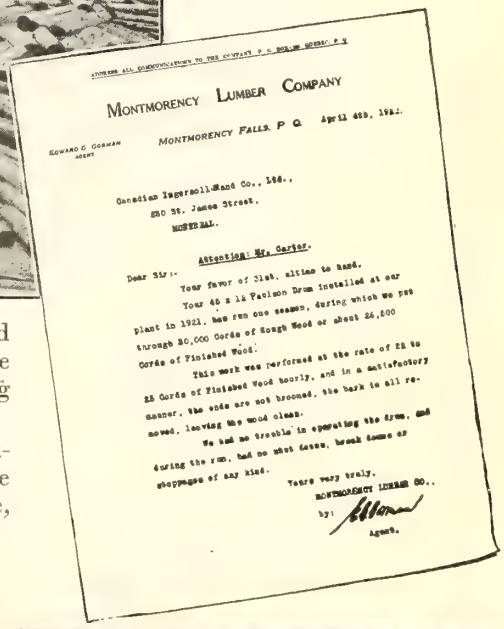


Ontario Forestry Branch
Parliament Buildings
Toronto, Ont.

"Paulson" Preference---







MONTMORENCY LUMBER COMPANY

MONTMORENCY FALLS P Q April 4th, 1921.

Canadian Ingersoll-Rand Co., Ltd.,
260 St. James Street,
MONTREAL.

Attention: Mr. Carter.

Dear Sirs:-

Your favor of 31st. ultimo to hand.

Your 48 x 14 Paulson Drum installed at our plant in 1921, has run one season, during which we put through 30,000 Cords of Rough Wood or about 26,000 Cords of Finished Wood.

This work was performed at the rate of 25 to 25 Cords of Finished Wood hourly, and in a satisfactory manner, the ends are not brocmed, the bark is all removed, leaving the wood clean.

We had no trouble in operating the drum, and during the run, had no shut downs, breek downs or stoppages of any kind.

Yours very truly,
MONTMORENCY LUMBER CO.,
by:
Agent.

It is a rather significant fact that Paulson Barking Drums have been specified as a necessary essential of the wood preparing plants of practically all of the largest mills built in Canada, the United States and Newfoundland, during the past three years.

This equipment is there because it has proven its worth. Materials, workmanship and design are modern — the product of builders who, knowing the importance of this equipment and the severe duty under which it must operate, build accordingly.

Bulletins, list of users and actual performance records sent on request.

Canadian Ingersoll-Rand Co., Limited

Sydney Sherbrooke Montreal Toronto Cobalt
Winnipeg Nelson Vancouver



Paulson Barking Drums

The Watford Engineering Works,

Limited.

Established 1827 by Mr. GEO. TIDCOMBE, Senr.

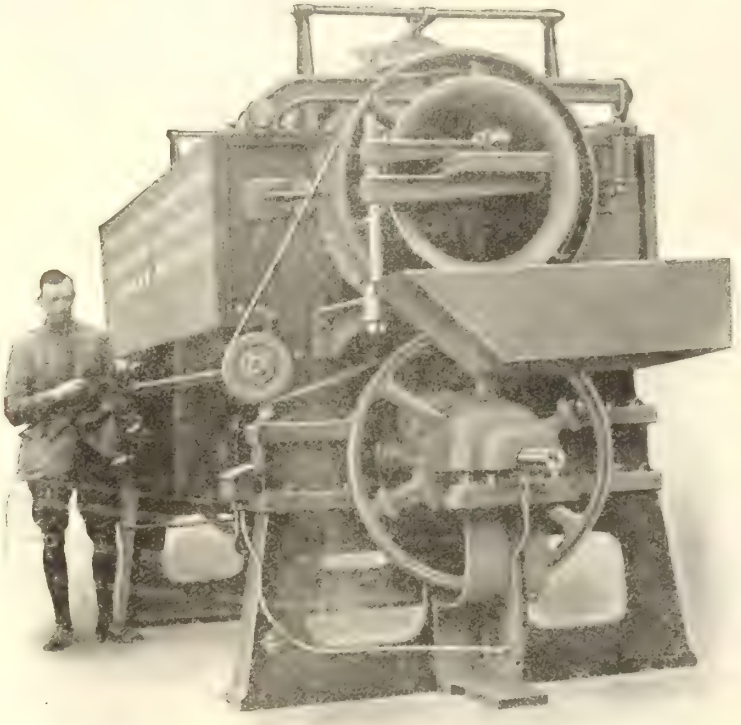
PAPER MILL ENGINEERS & MILLWRIGHTS

LOWER HIGH STREET, WATFORD, ENGLAND.

Telegrams: "Mechanical Watford." Code — 5th Edition A B C Telephone: 35 Watford.

WILLIAM WHYTE,

39 DRAPER AVENUE
MONTREAL, QUE.



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SOUTH FRANCE, GERMANY, ITALY, JAPAN, NORWAY, SWEDEN, SPAIN and SWITZERLAND: Messrs. Escher Wyss & Co., Zurich, Switzerland.

HOLLAND and BELGIUM: Mons. Edward Chantrenne, Nivelles, Belgium.

NORTH of FRANCE: Messrs. Lhomme & Argy, 9 Rue Lagrange, Paris.

U. S. A.: The Bagley & Sewell Co., Watertown, New York.

CANADA & NEWFOUNDLAND: Messrs. Chas. Walmsley & Co. (Canada), Ltd., Longueuil Works, Montreal.

The "Tremor" Screen

FOR PAPER MACHINES

(Either Inward or Outward Flow; Fully Protected)

Fitted with large drums suitable for Canadian and American practice

(A PURELY ROTARY SCREEN WITH NO RECIPROCATING PARTS)

Perfectly Silent Positive Rotating Drum and Minimum Upkeep

EXISTING SCREENS FITTED WITH THE "TREMOR" PATENTS

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New products bring new profits to dealers handling them. A new product recently added to the *"Interlake"* line, and one which offers a good profit to dealers is the

Interlake Bleached White Crepe
NAPKINS

Many new uses have been discovered for this product, which promise to greatly increase sales. The napkins are 14"x14" in size, folded, and conveniently boxed in cartons of 100 each.



FREE Counter Display

To dealers ordering a case of 48 cartons, we will send free of charge, one of the attractive counter display stands illustrated herewith. It is made to hold six cartons. Send for yours to-day.

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Limited

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The Boivin Regulator

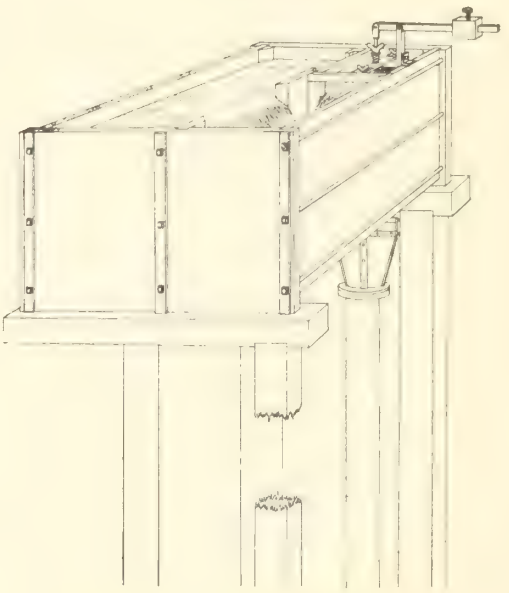
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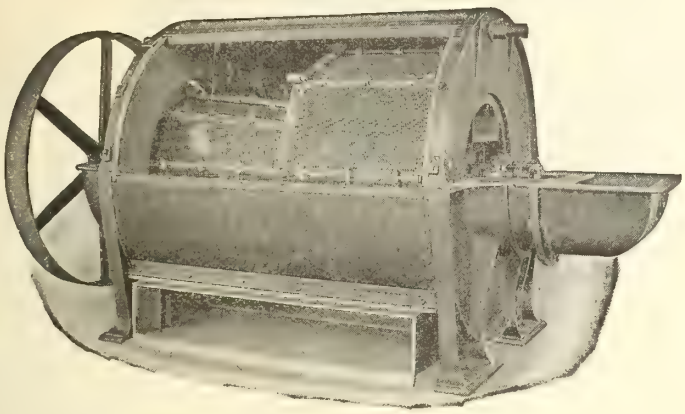
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MODERN CLOSED SYSTEM

No Pulp Lost Except Rejection at Bull Screen

Knotter, Knot Screen or Sliver Screen

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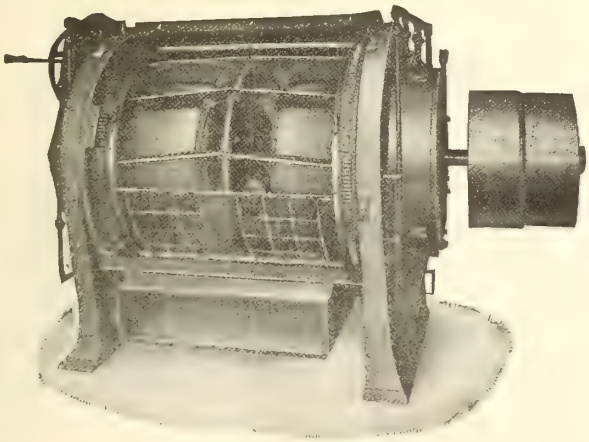


"IMPCO" KNOTTER

For sulphite, sulphate, soda, kraft or ground wood. Capacity up to 50 tons less than 1 H.P. per machine, single belt drive, no gears or sprockets, no packings, slow speed, quick detachable plates. The standard machine for removing knots, shives and foreign matter.

Centrifugal Screen

FINE SCREENING



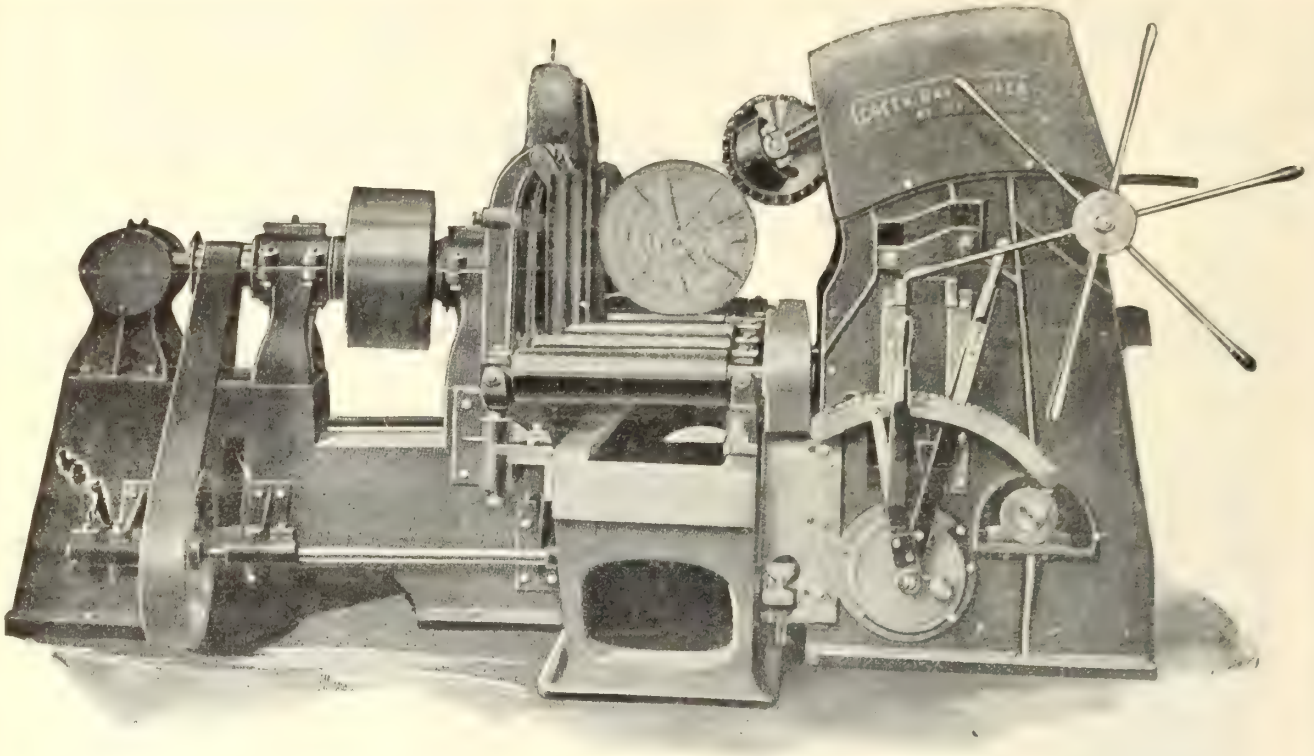
"IMPCO" SCREEN

For fine screening of sulphite, sulphate, soda, kraft or groundwood pulp. Highest quality of stock produced at minimum power: Revolving screen plates; mechanically correct.

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SHERBROOKE - QUEBEC



Equip your Mills with Green Bay Barkers--Materland Labor Saving Machines

BARKERS that have stood the test of time—both normal and abnormal. **Higher** prices will be obtained in normal times for paper manufactured from wood barked on rotary knife barkers. **Equip** your mill to take care of normal business conditions.

OVER 300 MACHINES in use in Scandinavian countries — Unquestionable evidence of the superiority of **Green Bay Barkers**, over any other methods known.

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Pioneers and leading the field, in Canada, in the manufacture of

PULP and PAPER MAKER'S FELTS

Largest Plant of the kind in the Dominion, ranking amongst the most modern FELT FACTORIES in the World.

Capacity easily taking care of very important Canadian customers' requirements — and shipments to the other Paper Making Countries.

The success and reputation of "Ayers Felts" bears evidence of the Quality and Dependability built into them. Construction features evolved for all kinds of machines, for all classes of paper, to give maximum efficiency with regard to the particular manufacturing problems in the various mills.

The Attainment of an Ideal

"FELTS
WASHED
WITHOUT
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The Patented "Ayers" **FELT WASHER** attains this ideal for which paper makers have long been striving. By the means of this device, the work of cleaning and washing the Felts is done without stoppage of the machinery and, in the case of news print or similar paper, without breaking or crushing the sheet.

PATENTED IN U. S. A., CANADA AND EUROPEAN COUNTRIES
PATENTS APPLIED FOR IN JAPAN AND MEXICO

Already in operation in some of the largest Paper Mills where it is recognized as indispensable and a great money saver.

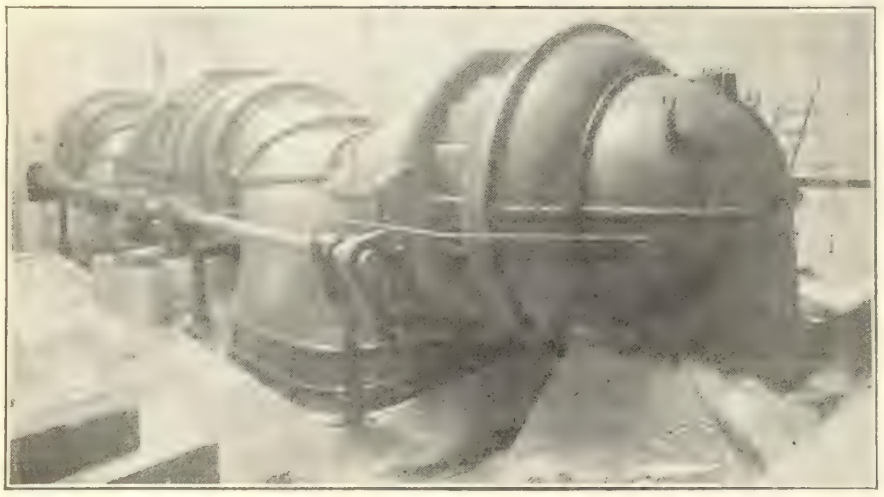
Privilege to install this FELT WASHER readily granted by AYERS LIMITED to all its customers on most reasonable terms.

Full particulars given upon application

A special Felt has been designed for use in conjunction with this Felt Washer wherever it is in operation.

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How you can conserve and cut steam costs that will startle you.

We apply common sense methods to Boiler Rooms and Steam Plants of all kinds.

Let us show you how it can be done.

Our Systems are unique.

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ENGINEERS *MANUFACTURERS*

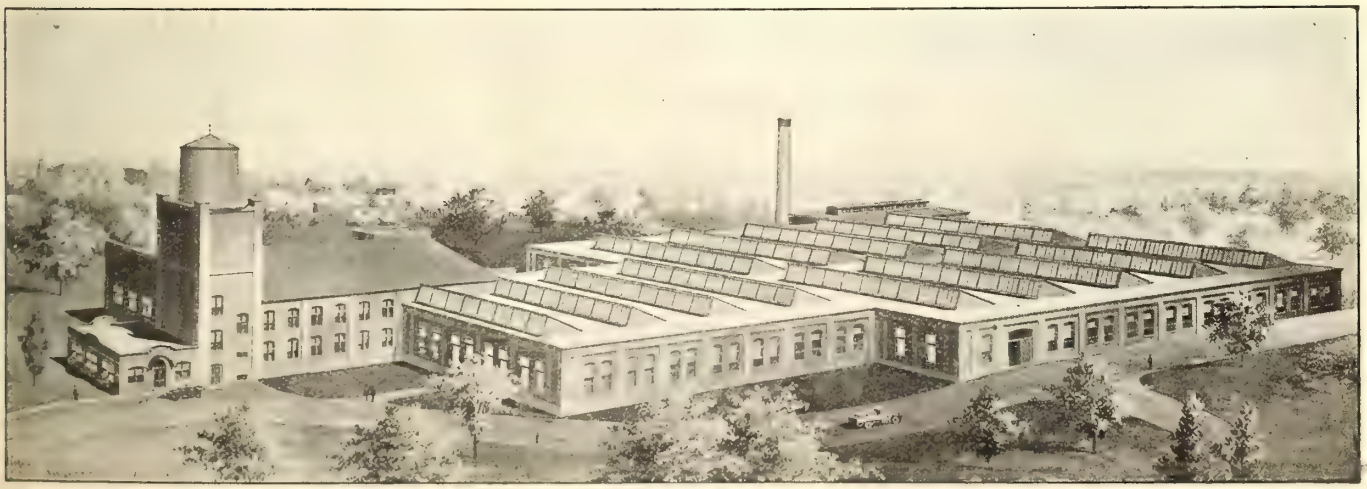
The production cost figures in many mills show that it is less expensive to remove water through felts than at the dryers. Actual working tests are daily demonstrating superior filtering qualities in---

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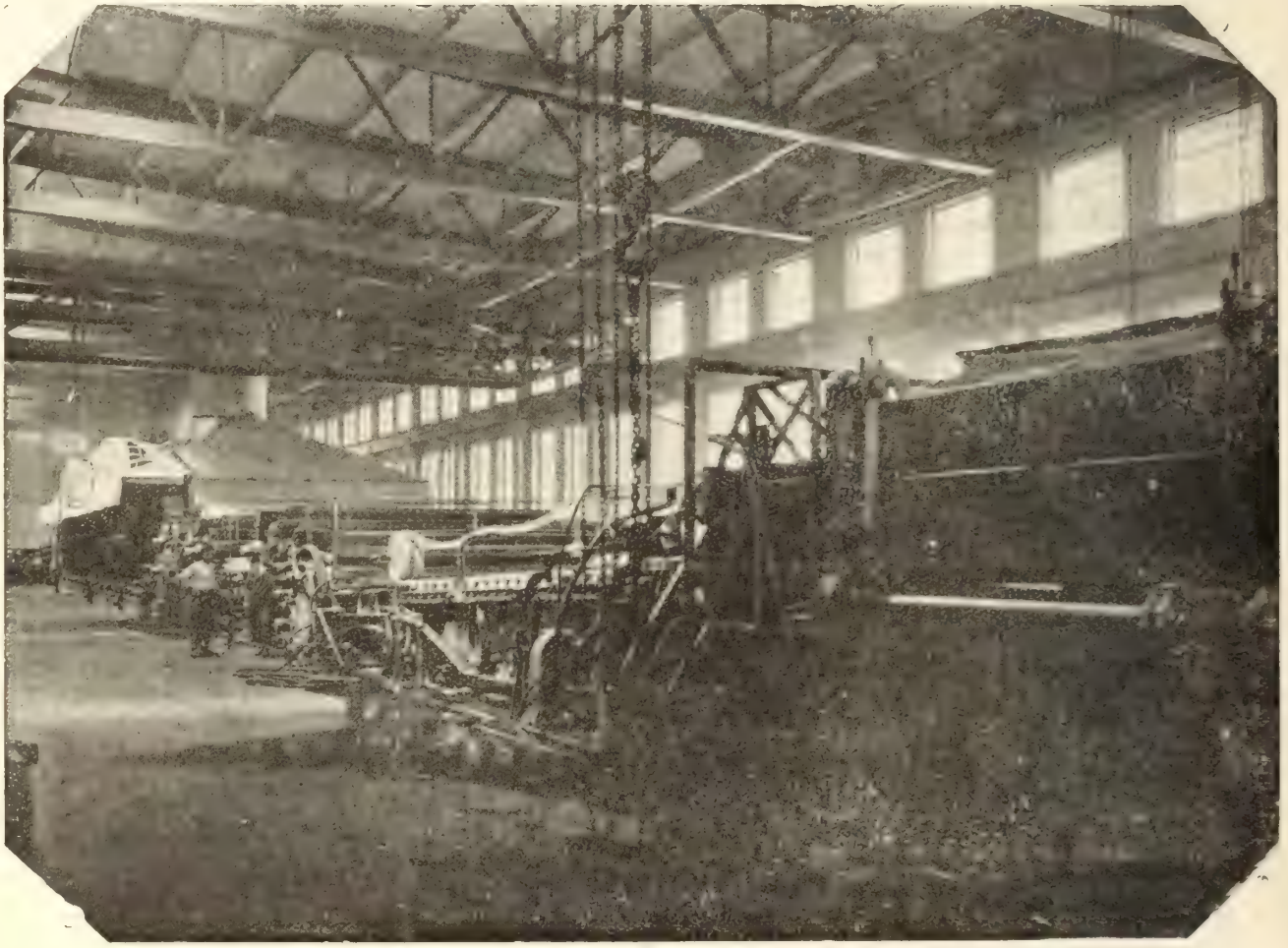
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Wet End of 232 in. Fourdrinier Machine at Abitibi Power & Paper Co., Iroquois Falls, Ont.
Which has given an output as large as 90 tons in 24 hours.

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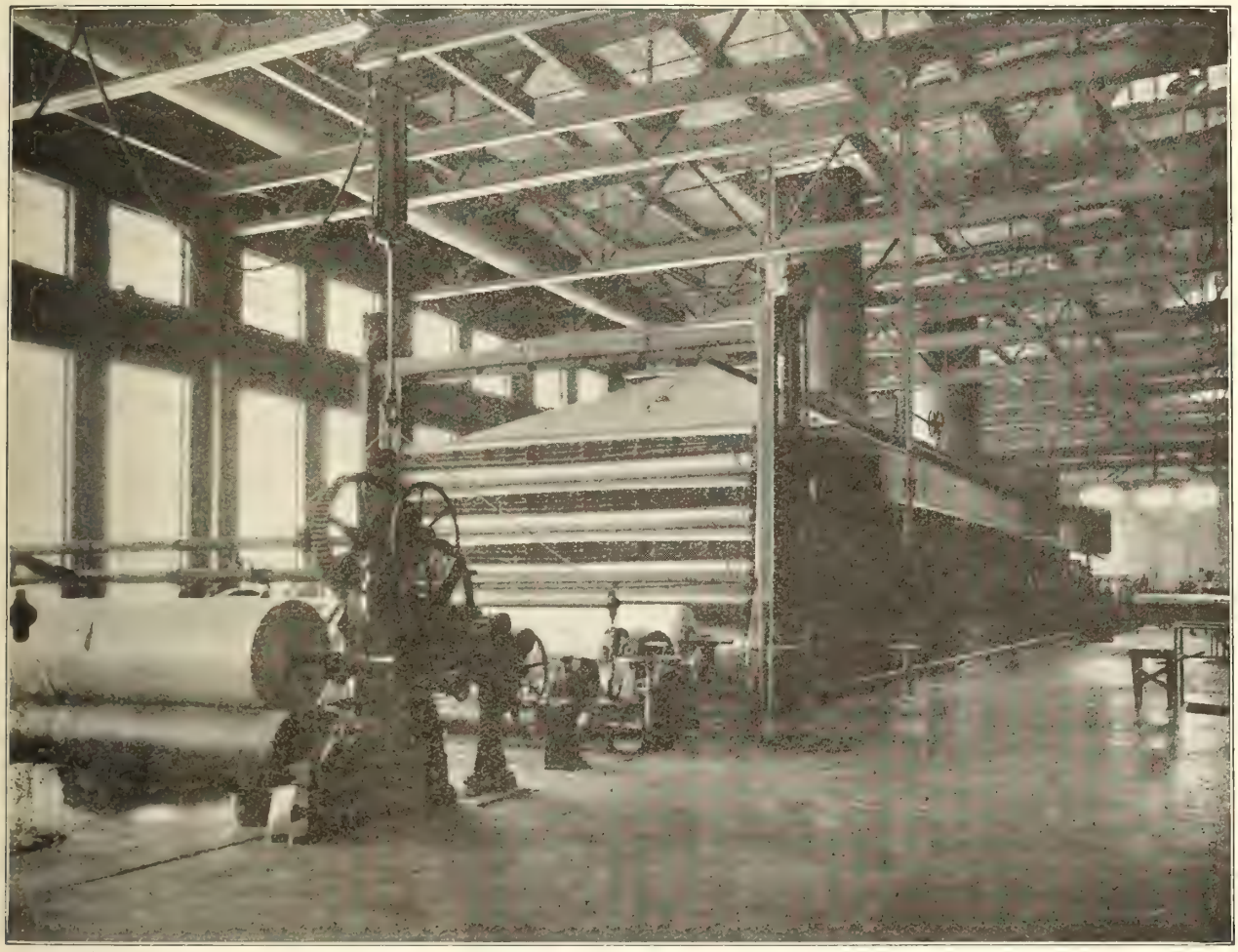
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Paper Makers

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Cables — **PUMPS BURY, ENGLAND.**
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Calenders, Reels, and Winder, on the Widest Machine in the World. There are two of these monsters at Iroquois Falls, Ont.

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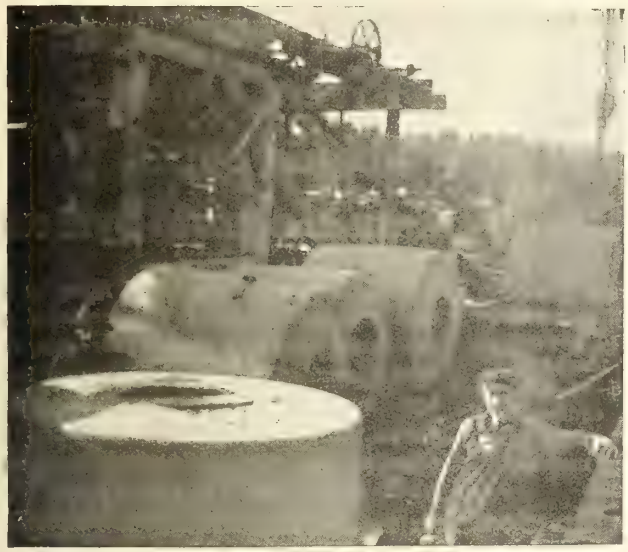


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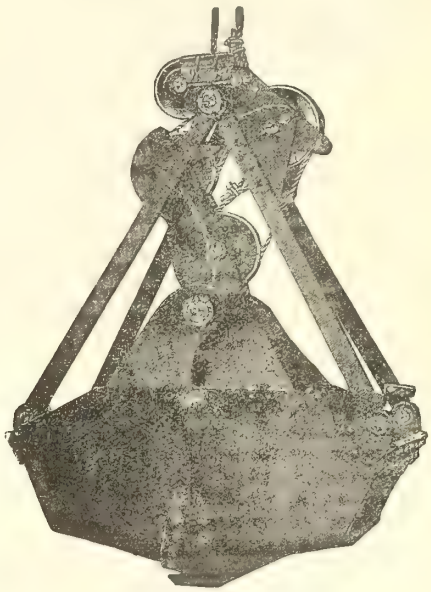
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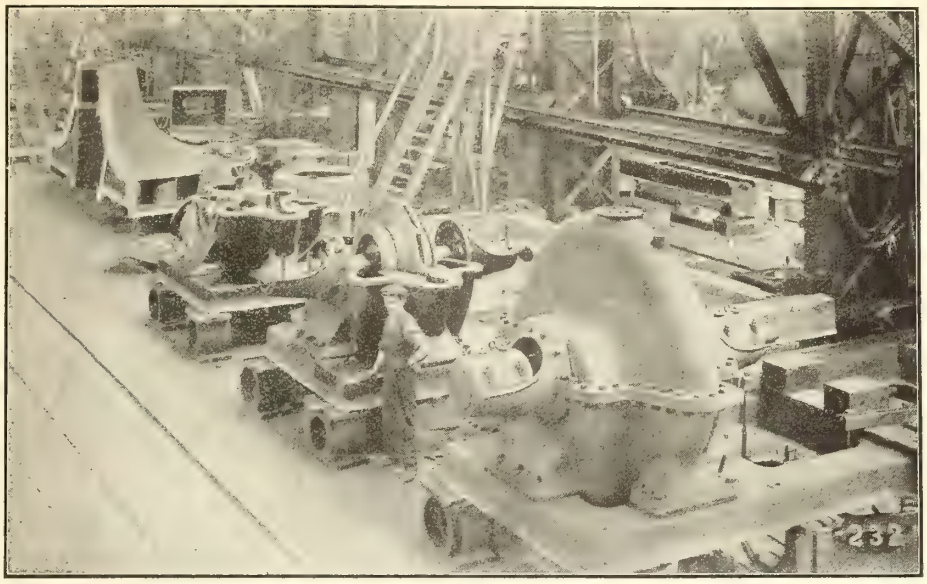
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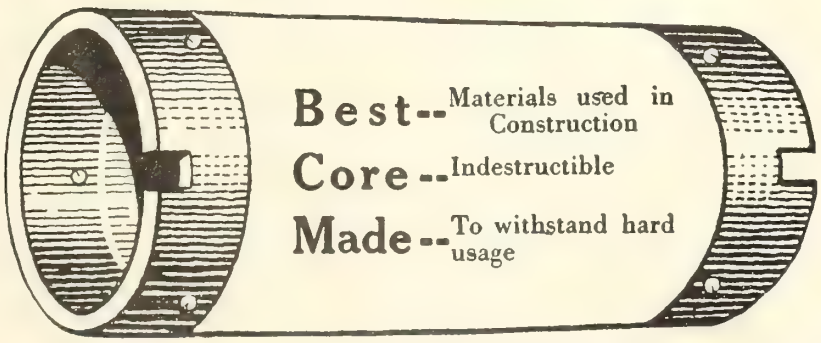
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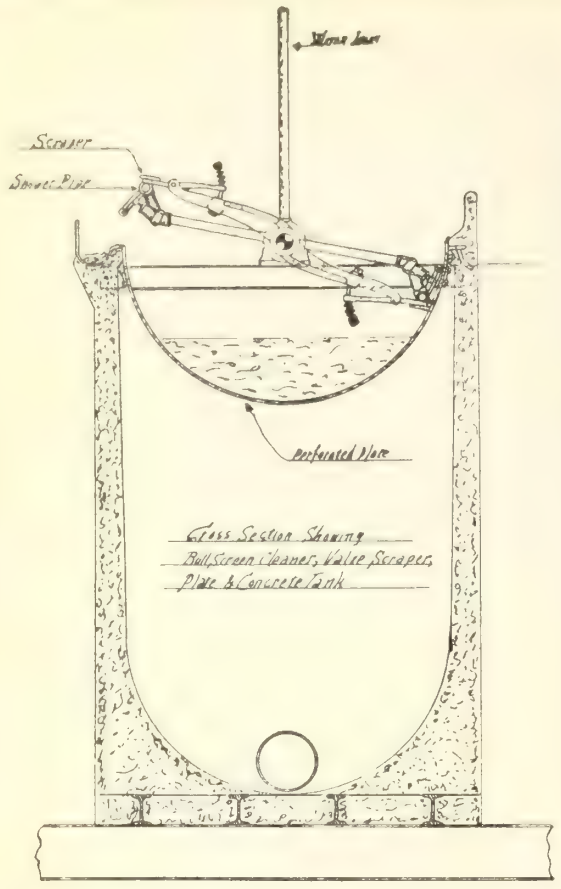
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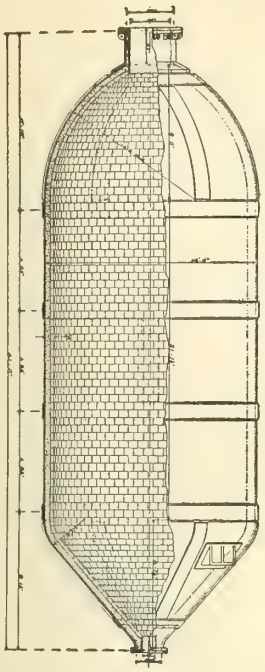
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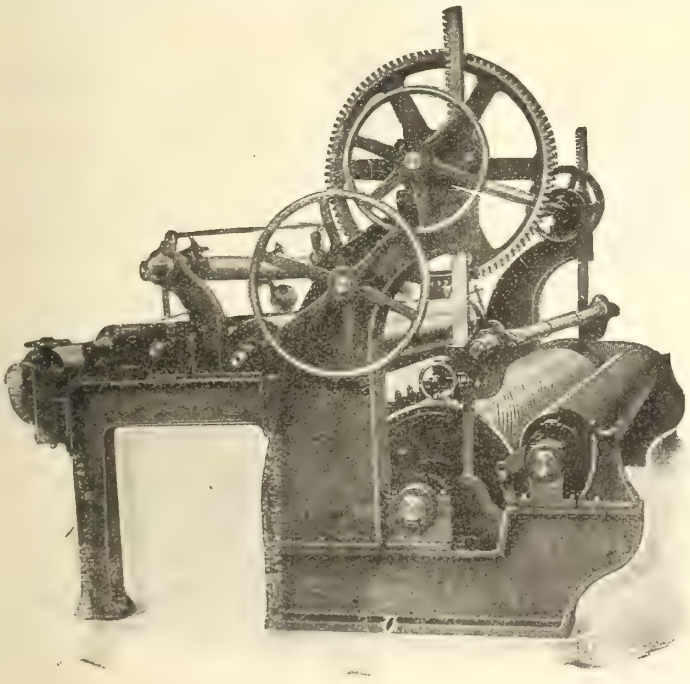
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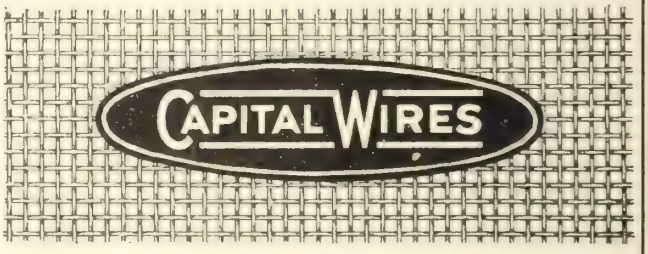
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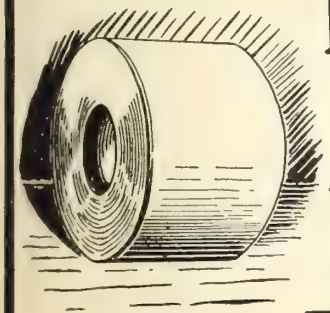




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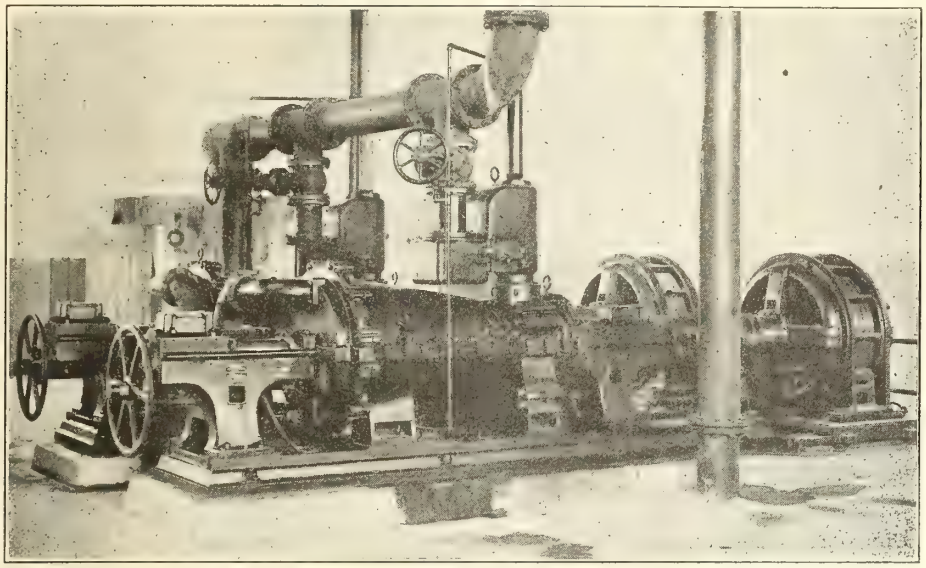
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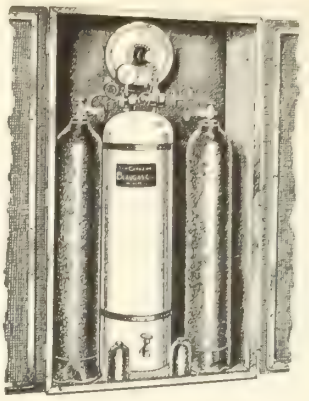
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A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XXI. GARDENVALE, QUE., June 28, 1923 No. 25

TABLE OF CONTENTS

Editorial:

Canada's birthday 643
The British Empire Exhibition 643
Pulpwood export bill passes 644

Special Articles

Trade associations foster fair dealing . . . 645
Technical Section had a fine meetng 649
Colloid chemical problems in the paper and cellulose industry 653

News of the Industry

Brompton entertains customers 648
Growing demand for kraft papers in India 648
May exports way up 652
Exports of Canadian newsprint 652
Paper and stationery in England 652
Montreal Paper Club revives 654
Norwegian mills closed by strike 654
Pulp and paper exports in May 1923 654
Pulp and paper news 655
Howard Smith Paper Mills extending 656
United States notes 660

Miscellaneous Information

How to handle complaints 651
The effect of furfurol in making pulp 651
Loss of head in stock papers 651
Paper mills in China 652
Will there be a famine in pulpwood? 657
Forestry abstracts 657
Review of recent literature 658
A new pump 664
List of chemicals 664

The Markets

Canadian trade conditions 661
New York markets 662

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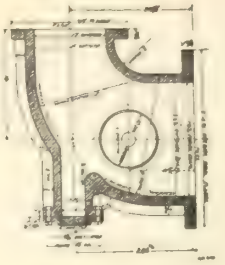
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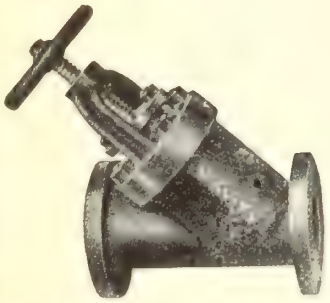
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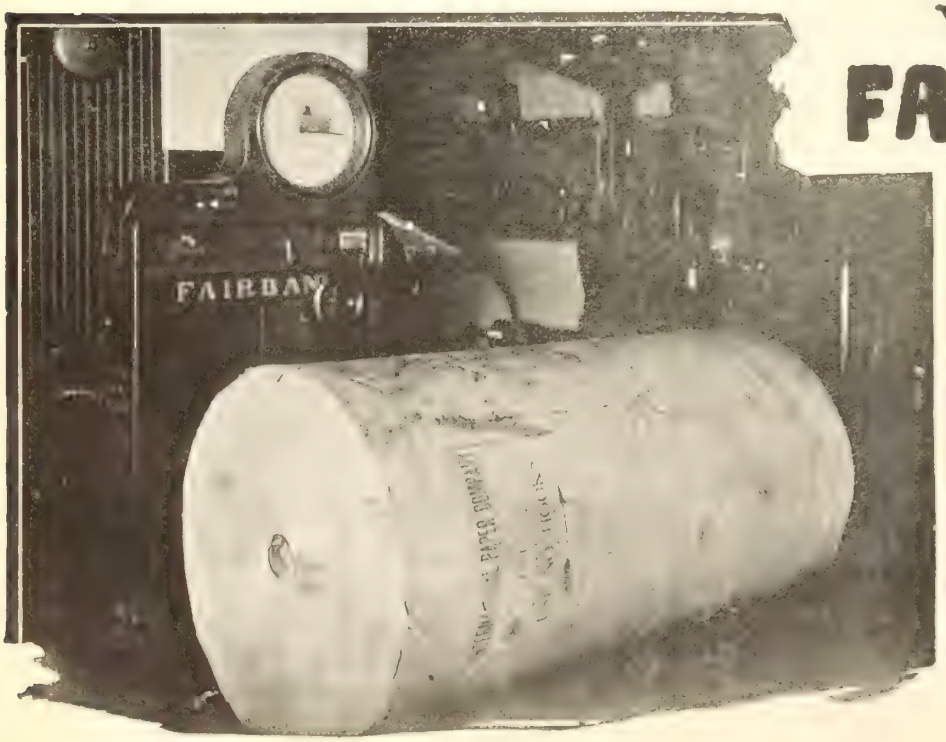
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Trade Associations Foster Fair Dealing*

BY EDWARD BECK,

Secretary Canadian Pulp and Paper Association

One of the earliest trade associations of which we have any record was that formed by Mother Eve and the Serpent to pass on to the ultimate consumer a consignment of forbidden fruit, with dire results to the human race, while an early and outstanding example of the unbeliever who refuses to unite with his fellows is found in the case of Cain who voiced his non-concurrence in co-operative effort by demanding "Am I my brother's keeper?"

Mr. O. B. Towne, an American authority on trade organizations, traces the history of the modern trade association back to the tenth century and says that the movement had its inception in the desire of British and Continental traders to protect themselves against the pirates and robber barons who then a made a practice of preying on Commerce and industry. This is interesting in view of the modern tendency upon the part of the uninformed to regard the trade association as a lineal descendant of these same pirates and robber barons.

"In England," says Mr. Towne, "highway robbery and piracy on the high seas were so common, and so galling to those who sought a livelihood in commerce and industry, that organizations called merchants' guilds sprang up in many cities of the Kingdom. They protected not only the transportation of the goods, but also saved merchants, manufacturers and workmen from being kidnapped and forcibly held for ransom. During the turbulent times of the Norman Conquest the Merchants' Guilds were so effective that their fame spread from city to city and guilds sprang into being in all parts of the British Isles.

"In continental Europe the robber barons made life so uncertain for the merchant, and business success so well nigh impossible, that merchants organized as did the business men of England."

He goes on to state there were no restricting laws in those days and that the guilds regulated the quantity of goods to be manufactured, fixed prices, determined apprenticeships, and prescribed who should enter certain fields of business. On the Continent, the Hansa unions, as they were called, had even greater liberty and were not only permitted but were encouraged by the Government to fix prices, regulate the volume of product to be manufactured, monopolize the market and crush outside competition. And yet, it is asserted, quality was a chief objective of these associations. They made their own rules and disciplined members who violated them. Cheating and fraud were made punishable by expulsion. Later on, the historian records, the guilds became aggressive. They took undue advantage of their privileges. Restrictions followed. Their memberships dwindled and finally they suffered collapse. The Hanseatic League, on the Continent, went through a similar experience and met disaster in the end because it wandered off into the bypaths of politics and failed to stick to its legitimate purpose. Herein is a moral for the modern trade association which should eschew greed and unfair practices, stick to business and avoid politics if it would prosper and serve the best ends of its members.

There probably has never been a time since trade and commerce came into being that some form of trade association has not existed. They are usually born of necessity. No man, says an inspired writer, can live wholly unto himself. An exception is reported in the case of Ishmael of old, whose hand was against that of every man and against whom was the hand of every man. He was the prototype of those occasionally met with in the modern business world, who scorn co-operation.

"Some years ago, in a certain industry which may serve as a type, there were several mills located in various parts of this country," says Emmett Hay Naylor, another American authority in describing the genesis, objects and functions of a typical trade association of the modern type. "Each mill was in effect a little castle in itself where the owner was a feudal lord, ever on the lookout with a keen and suspicious eye for a possible enemy. His knights were his salesmen, whom he instructed to take business at any cost away from his arch enemies—his competitors. He counted it the best kind of business to capture his competitor's trade and customers. His creed was the survival of the strongest and he made a veritable fetich of open, cut-throat competition. To do less was to do nothing, he thought. He had perhaps never met any of his competitors; to him they were just unprincipled, scheming thieves, whom he had no desire to know or even to recognize, except as a force opposing his own progress. His competitors thought the same of him and of each other. In such a situation each was content if he made a fair living and felt reasonably independent. He congratulated himself secretly, and sometimes openly, upon being a keen, astute business man, skilled in the little tricks of the trade. Like his father, and other such men, he was noted for his business acumen.

"But a day came when he got into trouble. He ran short of raw material and he couldn't obtain it any price. With a contract that must be filled, his only way out was to borrow from his nearest competitor, who happened to have a reasonably good stock of raw material on hand, as he had ascertained by simple bribery. It was a bitter pill, but he swallowed it and went to his competitor. He told of his difficulties and was amazed to find his competitor half civilized, indeed, almost human. Before he knew it, he found himself smoking one of his competitor's cigars and was surprised to discover that they had problems in common. They discussed them rather guardedly, but at least with enough frankness to be understood. In the end, the manufacturer went away with the assurance from his competitor of enough raw material to enable him to meet his contract on time. He had a queer feeling. He had been compelled to break a precedent, a sacred principle; yet he had found his competitor not such a bad fellow after all. The manufacturer was perplexed. Either his competitor had been very kind in granting him the loan, or in so doing he was up to some trick.

"The ice had been broken, however, and after that he met his competitor more often. Then came a strike in the industry and about the same time the prospect of a tariff revision. This ended in all the competitors meeting for conference. There wasn't a man there who would believe

* Paper read at the meeting of the Montreal Stationers' Association.

any other man present under oath, but they were each and all in trouble and each hoped to find a way of helping himself.

"Through several meetings they worked together with much suspicion and some friction, but in the end the strike was satisfactorily settled and the tariff schedule remained as before. When the work was all over they thought it fitting to celebrate the happy ending with a dinner. By this time each of them had learned that the others were not half as bad as he had thought. A certain fellow-feeling had been awakened and the old uncompromising spirit of distrust and suspicion was somehow gone. Some of them actually felt a little friendly toward one another.

"It occurred to a few of these manufacturers that since co-operation in time of trouble had been of so much benefit, there might be other problems they could work out together. They decided to come together more often, if only for sociability. Later it seemed well to be a little more authoritative in their acts, to have a better defined organization: and so they chose a name, adopted by-laws, and lo, a trade association was born!

"At the outset the organization failed of the support of some of the competitors, but soon important matters came up that they decided to establish an office and employ a secretary. More frequent meetings were held, and the oftener they met the more they found there was to do. One of the first things they wanted to do was to discuss and, if possible, determine the prices at which they were to sell their commodities, but they had a hazy notion of certain restrictions imposed by law, and feared lest they might inadvertently render themselves liable to indictment. To make sure of that point they retained a lawyer, who advised them at all their meetings just what they could and what they could not legally do.

"Eventually their association worked around to the salient principle that if its members were properly informed regarding exact market conditions, there was little likelihood that any of them would make a serious mistake in the sale of his product. They recognized that the tendency to cut prices and sell below cost usually arose from ignorance of exact market conditions, and that frequently such ignorance could be attributed to information received from unreliable sources.

"In order that they might know as definitely as possible what the supply and demand of the market would be, they decided to have their secretary compile, at regular intervals, statistics that would show exactly how the market stood. The members severally agreed to furnish the secretary confidentially the information necessary to compose these reports. The Secretary was not to make public the private information received from members, but was to issue all statistics in summaries.

"In order that he might give correct information, it was found necessary for each member to know what it cost him to manufacture his product. At first a few of the members who had good cost systems showed some of their competitors the principles and proper practice of cost accounting; for they rightly assumed that a competitor who knows his costs is less to be feared than one who runs his business by rule-of-thumb methods. Gradually, the industry approached a reasonably uniform cost basis.

"We must not think, however, that all this work of establishing sources of information, a uniform cost system, etc., was accomplished in a few months. Much time was consumed and much talking and urging was required before certain members would consent to give the secretary the desired information. It was not until several years had passed that all the manufacturers of the industry were convinced that they should be members of the association, and not until considerably later that all were willing to furnish information, or to consider a uniform cost system.

"It is shown clearly in the record what this co-operation, by being correctly informed, has done for that particular industry in a year. For many industries it was a trying year and especially for the industry in question. But while orders and production fluctuated considerably throughout the year, prices remained uniform. Toward the latter part of the year, as the cost of raw material increased, prices advanced proportionately. This result was directly traceable to the association, since every member knew exactly, when he received his weekly report, that he was getting his share of business. The reports of prices obtaining in the raw material market were also carefully observed. Business was indeed poor, but each manufacturer knew that he was no worse off than his competitors. He did not fear, as he might have done previously, that some one else was getting his business away from him; therefore he had no inclination to send his salesmen out to sell his product at a lower figure. Prices did not decline.

"In this case there was no collusion, agreement, meeting of minds, or anything of the kind. Each manufacturer was simply informed as to the exact market conditions and used his own individual and independent judgment. The results as shown by statistics were that, where, under much less trying circumstances, the aggregate industry would probably have lost many hundreds of thousands of dollars through undercutting of prices and ruinous competition, the intelligent co-operation of these manufacturers had saved them between $5,000,000 and $6,000,000. No hard feelings had been engendered and both manufacturers and customers were well satisfied. A year that otherwise might have proved disastrous had ended with a fair degree of success, viewed from the standpoints of harmony, satisfaction and profits. Nor should it be forgotten that where prices are cut recklessly and where every man tries to undersell the other, the disastrous result is not merely temporary, since the industry required several years to recover from the effect of such conditions.

"The association whose experience has been narrated is now one of the many strong trade associations in the United States. Its members are doing many other things of a co-operative nature, such as working together on freight rates, insurance, credits, trade abuses, etc. One result of such co-operation is seen in the fact that not long ago, when a part of the industry was affected by a local strike situation, the competitors in that particular district got together and appointed one of their members whom they gave power of attorney, that he alone might represent them in this labor difficulty, which he did successfully.

"What has been been accomplished is further shown by a remark of one of these manufacturers. He said: 'I used to think that Smith was one of the meanest and most contemptible man that ever drew the breath of life, but since I have come to know him at our meetings and have visited him at his mill, I have found him to be one of the finest men whom I have ever had the honor to know.' Men who several years ago would not trust one another even in the smallest matter are now working together, and are not only making larger profits but are working more happily than they ever thought possible under former conditions."

No one of sense will deny the usefulness or the value of a legitimate trade association. There was a period, particularly in the United States, when there was a tendency upon the part of the public to regard all such associations as more or less evil. Special laws were enacted to restrict their activities. Commissions and boards

were created to control and govern them. That era is now disappearing. In the States today there is a tendency to recognize and encourage the legitimacy of co-operative competition. This tendency recently found expression in a statement by Herbert Hoover, Secretary of Commerce. He says:

"The legitimately formed associations have contributed greatly to the improvement of business morals and practices, have cheapened our production and distribution processes, have improved working conditions; have, by the statistics they publish of production and distribution, enabled our whole commercial public to form safer judgments as to their future policies. They have contributed to the advancement of our foreign commerce and generally they have interested themselves in our economic welfare. Their services should be preserved and even better organized."

The New York Evening Post, too, which has also recently given considerable study to the question of trade associations sums up its conclusions by saying:

"It is only after we have understood the sound functions to be subserved by trade associations that we can guard against abuses by prohibitions and restrictions. Superficially, it may seem proper to prohibit any activity which tends to limit competition. But there is sound and unsound, healthy and unhealthy competition. A trade association which act to prevent such ruinous price slashing that weaker firms must go to the wall, acts not to restrain competition but to protect and preserve it. Business men who are not joined in a trade association often compete in ignorant self-interest, while those in the right kind of trade association compete in enlightened self-interest. That is, a manufacturer's eagerness to beat his rival by lower prices will not be lessened; but he will not be misled into flooding a market already full when he has an accurate knowledge of demand and stocks on hand."

In Canada public opinion has never been quite so rabid on the subject as it has in the States. till, even here, trade associations, in dealing with the subject of competition, must step warily lest they find themselves transgressing the law. We find, even at the current session of Parliament, new legislation being put through which is believed by some to be designed to hamper co-operative efforts in promoting trade. Singularly enough, while this is to be applied to manufacturing industries, we find the Government itself extending to the great grain-growing industry of the West encouragement and support in their efforts to form a wheat board which shall fix an arbitrary and uniform price for their products. Labor combinations, likewise, are exempt; only manufacturers and traders are to come within the scope of the new legislation.

I promised your president before I got through I would say a few words as to the scope and the activities of the Association with which I am directly connected and in which your own association has at least a fraternal interest since the stationery business is founded on that of the paper manufacturer. Our Association, now in its eleventh year, is regarded as one of the most flourishing in the Dominion. It owes much of its strength to the troubles it went through in the days of "Government control" during and subsequent to the war. The attacks to which they were then exposed forced the manufacturers into common defensive measures and taught them the value of co-operation. The aims of the Association are briefly stated. They are to make the pulp and paper industry predominant in Canada; to improve the quality of its products; to keep its personnel informed on all new developments, especially those likely to affect its markets; to collect and disseminate its members the vital statistics of the industry, having relation to production, shipments, stocks in reserve, imports and exports; to assist in meeting transportation problems; to watch legislation, and to carry on advertising.

The association comprises several sections—Newsprint, Book and Writing, Felt, Board, Coated Paper, Wrapping Paper, Sulphite, Kraft, and Mechanical Pulp—each of which has its own chairman and functions separately.

The Association issues regularly weekly and monthly reports on production, shipments, etc., covering all the varieties of products which its members are engaged in producing. It maintains by cable an interchange of similar information with the Scandinavian Cellulose Association, whose headquarters are in Stockholm, and with the newsprint producers of Sweden, Norway, Finland and Germany, regular reports covering these countries being received and distributed.

The Association pays attention to the promotion of technical efficiency and maintains a Technical Section, composed of the principal technical men in the mills, to further that purpose. It has contributed $26,000 towards the expense of getting out a series of vocational textbooks to promote efficient workmanship in the mills. It is helping to maintain and carry on a correspondence course for mill operatives, based on these text-books, in which at present over 300 students are enrolled. It acts as a medium for finding summer employment in the mills for under-graduates of Canadian universities who intend ultimately to look to the industry as a means of livelihood and, during the past four years has placed upwards of 400 students in temporary positions in this way.

The Association also maintains a Woodlands Section, composed of the chief foresters and woodsmen of the companies. This Section meets twice a year or oftener to discuss forest problems. Just now it is engaged in trying to solve the problem of how best to salvage the large amount of pulpwood left dead or dying from attacks of the budworm and other wood-destroying insect pests.

The Association also maintains a Transportation Bureau, with a competent traffic man in charge, to assist members in meeting their shipping problems.

The functions of a legitimate trade association, it will be seen from the foregoing, are many. As chief of them I would place that of inspiring a feeling of goodwill and confidence among its members. It can and does demonstrate that men may be business rivals and still maintain towards one another a feeling of friendship and respect. Association in a trade organization broadens men and teaches them toleration and self-control. It inspires faith in their fellows. King David was clearly not a member of a trade association when he gave utterance to the sentiment that all men are liars. In a trade association we learn that men can and do tell the truth; that they can be relied upon; that they can and do play the game on the square; that they are willing to give and take, to be honest with their business associates, to apply the fundamental principle of the Golden Rule to their commercial conduct.

" In time of danger the savage separates himself from his fellows and fights alone, because he is a savage," says a writer, discussing "the Philosophy of the Trade Association."

"Discipline and organization are not obviously fundamental in time of peace. But in time of trouble, the two things most needed are discipline and organization. In them is safety. In time of commercial readjustment, protection for the individual is in the discipline which makes for rigid adherence to fair practice codes of honor and honesty. Confidence is not an easy thing to maintain in the face of changing conditions and turbulent business thinking. But rigid adherence to the principles of asso-

ciation which maintain justice to all, can steady the ship so that it will ride out the storm.

"No association ever went wrong and turned from the path of rectitude because of honest effort at justice in human relations. Just as truthfully may it be said that no questionable, or unethical practice ever developed in a trade association that did not have its origin and practical demonstration in the business methods of individual members. An aim of the trade association is to maintain codes of ethics and honor in business relations. Honesty is the best policy. It is also the best economy and, like truth, is a labor saving device.

"Organized business effort, in the scheme of economics and sociology, is therefore a means to the betterment of those conditions under which humanity labors for life and livelihood. Its function is the elimination of injustice, fraud, misrepresentation, greed, oppression, domination, untruthfulness and dishonesty in the economics of human relations and the substitution of justice, fairness, truth, and honesty in their stead. The means to this end is practical and operative business democracy."

BROMPTON ENTERTAINS CUSTOMERS

Brompton Pulp & Paper Co. directors met on Thursday in their regular monthly meting, the most important feature of which was the declaration of 4 per cent. dividend on the preferred stock, following a declaration of 2 per cent. in April and a similar declaration in May, making the total of 8 per cent. paid on arrears of 12 per cent. It is expected that the remainder of the arrears will be paid off and the dividend payment brought up to date during the summer. Managing Director Bothwell reports business as being very encouraging.

Directors of the company were hosts at the dinner that evening to eighteen of their western customers, one of whom comes from as far away as Dallas, Texas. These customers are envelope manufacturers, who have been in convention at Niagara Falls, and who left Thursday night to visit the Groveton plant of the Brompton Company. From the experience of a visitor to that plant, it is safe to say that Brompton's relations with these customers will not be impaired after the latter have met the men who are responsible for turning out paper at the Groveton mill.

Last week the Brompton Company, which controls the mills at Groveton and Claremont, N. H. entertained a group of operating officials of those plants at the East Angus and Bromptonville mills. In connection with this opportunity to see the operations and get acquainted with their Canadian confreres, a banquet at the St. George's Club in Sherbrooke was enjoyed.

CHINESE PAPER MILL SHUT DOWN

The paper mill at Pei Sha Chow, Hupeh, was established under the auspices of the late Mr. Chang Chih-tung, Viceroy of Hupeh and Hunan of the late Tsing Dynasty and financed with public funds. Recently owing to lack of adequate financial support from the Hupeh provincial authorities, the mill has suspended work. Seeing that the continued suspension of the mill would cause financial losses to the Hupeh provincial Government, General Hsiao Yao-nan has decided to farm out the plant to private persons. A group of merchants represented by L. Yu-ching are negotiating with the Hupeh officials to rent the paper mill in order to turn it into a private concern.

GROWING DEMAND FOR KRAFT PAPERS IN INDIA

Trade Commissioner H. A. CHISHOLM in Commercial Intelligence Journal.

Calcutta, May 15, 1923 Pape merchants in Bombay, Calcutta and Delhi report a growing demand for kraft and wrapping papers throughout the country. There are two distinct features to this demand—the Bombay cotton mill market and the general bazaar trade.

The Cotton Mill Trade

On the Bombay side there has in recent years been a rapid development in the Indian textile industry and the mills there are maintaining a large production of cotton piece goods. It is in connection with the wrapping of the finished webs of cloth that this market for kraft paper arises. There is nothing special in the quality or weight of papers used by the cotton mill trade, and requirements are easily filled from stocks normally carried by large paper merchants.

The Bazaar Trade

Until very recently a visitor to the average Indian foodstuffs bazaar would have seen the bazaar merchant squatting cross-legged among his little conical piles of flour, pulse, gram, etc., weighing out a few pounds of his wares on his ancient scales and wrapping up each purchase with bits of old paper and grass. To-day a visit to the same bazaar reveals the dealer squatting and weighing out bits of flour and pulse in the same old way, but now the small purchaser may receive his flour in brown paper bags much, as the Canadian housewife receives a few pounds of sugar or rice from her grocer. To be sure, not every bazaar merchant takes such pains for the convenience of his customers, but in many of the largest centres the brown paper bag has become almost an established custom. In this trade, only the cheaper grades of wrapping papers are employed. Cheapness is the first essential, as price is the sole consideration when the Indian bazaar merchant buys paper bags.

Increasing Imports

The volume of wrapping paper imported during the twelve months ending March, 1923, increased 50 per cent as compared with the previous twelve months to a total of 156,000 cwts.—an amount equal to that imported during the entire three-year period 1917-1920 and slightly in excess of the volume imported during the import boom year 1920-1921. A feature of last year's trade was the increase in imports of American wrapping paper. According to Indian official Customs returns, imports during the last three years have been as follows:—

Packing Paper from —	Twelve Months, April 1 to March 31 1920-21 Cwts.	1921-22 Cwts	1922-23 Cwts.
United Kingdom	49,915	66,144	58,927
Sweden	13,382	10,630	16,596
Norway	30,718	3,349	11,994
United States of America	33,695	3,369	23,203
other countries	27,027	24,965	45,280
Total	154,737	108,457	156,000

Technical Section Had a Fine Meeting

In point of view of attendance and interest, the Summer Meeting of the Technical Section held last week in Montreal and vicinity is one of the best that has yet been held. An even forty gathered at the Ritz-Carlton hotel in Montreal at 10 o'clock last Thursday morning, and got aboard the big auto busses and overflowed into an additional automobile for transport along the beautiful shores of the St. Lawrence River to Ste. Anne de Bellevue. At this historic spot, made famous by the "Canadian Boat Song" written by Thomas Moore whose temporary residence was seen by the visitors, and by the early location of one of the important Hudson Bay trading posts, the visitors found a good deal of present interest in passing through and viewing the attractive grounds and buildings of Macdonald College and in inspecting the beautifully located and finely equipped plant of the Industrial and Educational Publishing Company, publishers of the Pulp and Paper Magazine. The Company entertained the guests to luncheon at the Senneville Country Club. After the lunch had been carefully stowed away, Mr. J. J. Harpell, president of the Company welcomed the Technical Section as guests, and Mr. O. F. Bryant, chairman of the Technical Section expressed the appreciation of the members for the cordial reception and the hospitality shown them throughout the trip.

Mr. Bryant then introduced Mr. J. O. Ross of the Ross Engineering Corporation who gave a very complete and interesting description of the Briner Economizer and its use in connection with paper machine rooms.

Mr. Ross' excellent paper will be printed in an early issue of the magazine and this will be followed by the discussion that took place after the reading of the paper. A number of the members had questions to ask about the equipment and other points in connection with its operation and its effect on paper machine economy.

The program committee feels proud of that fact that promptly at 2:30, the time named in the program, the party was on board the Captain Jack at the wharf at Ste. Anne de Bellevue and proceeded down the Ottawa River into Lake St. Louis and across to Beauharnois where one of the plants of the Howard Smith Paper Mills Limited was inspected. The secretary of the Section claimed the honor and credit for the selection of the weather which apparently had been made for the occasion.

As indicated on the program, this is the first occasion on which the Technical Section has visited a mill manufacturing the highest grades of paper, and it was indeed a revelation to those who visited the Howard Smith Mills at Beauharnois to note the exceptional care which is taken at every phase of the process. It was also a bit of a shock to newsprint and other men who are accustomed to seeing practically all of the processes carried principally by mechanical means to see the enormous amount of hand labor which is necessary in producing the highest grades of paper. The inspection of the plant was in charge of Mr. David Crabtree, and he had an efficient corp of conductors ready to take the visitors around in small groups so that every operation could be carefully explained to those interested in knowing just what was going on. Mr. R. M. MacLean was in general charge of arrangements for visiting the plant, and one of his most successful contributions to the enjoyment of the trip was the provision for entertainment on board the boat. After two hours spent in the most enjoyable way going through the paper mill the guests were each presented with a beautifully gotten up box of ladies' stationery, and with a booklet describing in general the processes of fine paper making, and in particular the mills of the Howard Smith organization, located at Beauharnois and Crabtree Mills, Que., and Cornwall, Ontario. This booklet is one of the most artistically prepared pieces of printing that has been done in Canada in connection with any industrial enterprise.

After a fine sail down Lake St. Louis, the party arrived at Lachine early in the evening and proceeded by motor busses to the Ritz-Carlton Hotel where a complimentary dinner was partaken of.



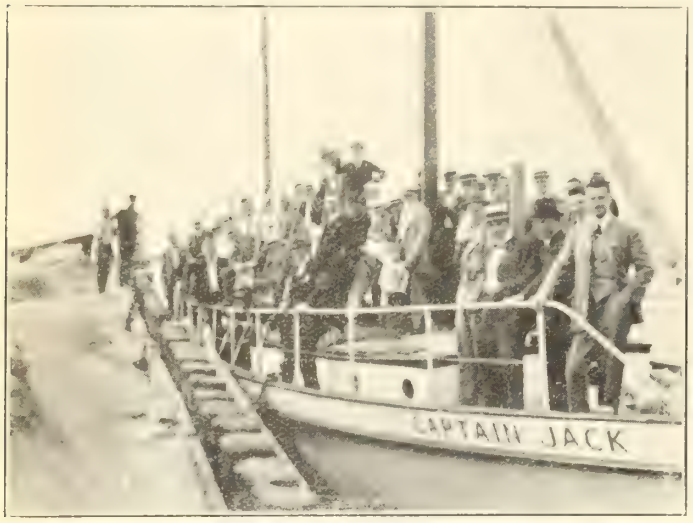
The Technical Section visits the Garden City Press

The Vice Regal Suite of the Ritz-Carlton Hotel witnessed a very happy party that evening and an excellent meal was heartily enjoyed. Besides the friendly conversation of those who were still talking over the interesting events of the day and the renewal of old acquaintances and the making of new ones, excellent musical entertainment was furnished by the committee and this was participated in by members of the Technical Section.

While the event was not a speech making affair there were some very good talks. The chairman, Mr. O. F. Bryant, referred in generous terms to the courtesies that had been extended by the Industrial and Educational Publishing Company and by the Howard Smith Paper Mills and indicated an enjoyable visit the following day to the extensive plant of the Dominion Engineering Works.

The first speaker called upon was Mr. George Carruthers, chairman of the Joint International Committees on textbooks, past chairman of the Technical Section, and vice-president of the Pulp and Paper Association. Mr. Carruthers is famous for his fund of stories, but the industry is by no means losing sight of his exceedingly valuable contribution to its welfare and progress through his intense interest and helpful work in connection with educational and other matters which are exceedingly vital to the welfare of the industry. Mr. Carruthers dealt par-

ticularly on the need for the development of something that will take the place of the old time apprenticeship system modernized to meet present conditions, something that will really provide a training for those who are going to be THE men of the industry. In expressing this view, he was ably supported by Mr. A. P. Costigane, secretary of the Ontario Pulp and Paper Makers' Safety Association, and the chairman of the apprenticeship committee of the Technical Section. Both Mr. Carruthers and Mr. Costi-



Leaving Beauharnois — All aboard

gane have themselves served their apprenticeship and know how valuable it is for a young man to learn an industry in a systematic manner. The industry needs young men who have been trained in it from the ground up.

Mr. R. S. Kellogg, secretary of the Newsprint Service Bureau followed with an excellent talk which may be summarized as follows:

Only in the last fifty years has the world had enough paper, for only in that period has wood been generally recognized as its constituent, according to Mr. Kellogg, who emphasized the importance of the industry to the life of North America as a whole, pointing out that recognition of its worth was accorded during the war, when paper makers in the United States were exempt from military service.

Education was also dependent on paper, for without it books could not be made and the swift progress of education in recent years was largely due to the discovery of wood as a prime substance for the manufacture of paper.

The speaker drew a perturbing picture of vanishing forests when he compared the systems of wood replenishing adopted on the North American continent with those in Germany and the Scandinavian countries. The American system was rather a lack of system, for figures proved that the countries of Europe grew as many trees as they used, while such was far from being the case here. A million cords of wood was now annually used in North America for paper, and worse than this, 130 million cords had been consumed within the last half century.

"There is urgent need to set our house in order," said Mr. Kellogg, who said he began to smell the smoke of forest fires when he left New York and continued to have the odor in his nostrils here in Montreal. Either the fires must be controlled or prevented before their inception or the paper-making industry must die, was the form of ultimatum placed before the paper-makers by the American visitor.

The American visitors of the Technical Section were well represented by short speeches from Mr. B. Johnsen and Mr. H. W. French of the Hammermill Company and Mr. W. G. MacNaughton, secretary of the Technical Association of the Pulp and Paper Industry. Mr. Johnsen made the plea that Technical men should impress more clearly upon the management the value of the technical service that they can render their organization and their industry. Mr. French spoke entertainingly of his first contact with Canadians in France, and of his growing respect and fondness for them.

On Friday morning the Section again assembled at the Ritz and were taken in motor busses and automobiles to the plant at Lachine of the Dominion Engineering Works, where they saw under construction the 230 in. paper machine for the Belgo Paper Company, and a 234 in. machine for the Backus-Brooks Paper Company at Kenora, Ontario. It was quite a novel sight for the Technical men to examine the huge as well as the small parts of these paper machines in process of manufacture, and to see the great care that has to be taken in the manufacture of even a so-called rough part of a paper machine. In the foundry, the men were just starting work on the core of one of the huge dryers, which are made six or eight inches longer than they will be in the finished state in order that the last traces of impurities may float to the top and be removed before the dryer is finished. After casting and cooling, these huge pieces of metal are given a roughing cut on the outside to bring them to a true cylinder and



The Apprenticeship Committee held a serious meeting on the boat

the dross is cut off the end and then they are placed in another machine where they turn on their own outside surface and are finished on the inside by giving them a comparatively smooth cut. This insures that all parts of the shell will be of uniform thickness and that all strains due to contraction of the surface are removed. The dryers are then given a finishing cut on the outside and are carefully polished and then covered with grease to keep them in perfect condition until they are shipped. These dryers are to be equipped with the so-called duoliptical dipper.

In cutting the huge dryer gears, the pitch line of the gear is cut on its outside surface so that in adjusting the bearings of the machine, the pitch circles of gears that mesh together are brought into tangency. This insures perfectly smooth running of these gears. The castings for these dryers weigh in the neighborhood of 18,000 lbs. each,

One of the interesting sights that attracted the attention of the visitors was the huge suction couch roll, in which 13,755 lbs. of the highest grade bronze was used, and which was perforated with 130,000 holes. Each of these holes has to be burred both inside and out, and the roll has to be finished perfectly smooth both inside and out. The visitors were told that in the case of the suction press roll in the neighborhood of 500,000 holes were drilled in its shell.

The greatest care has to be taken with the castings used in paper machines and where a large number of pieces are to be made or the casting is required for a particularly critical spot, a sample is machined, tested and then broken to make sure that the alloy is perfect, and that the casting is accomplished without introducing any flaws.

The whole morning was occupied in this visit to the Dominion Engineering Works where vsitors saw not only the paper machine parts in process of construction, but they saw also some of the huge work which is being done on a lot of hydro-electric equipment that is now going through the shop. It was astonishing to learn that this one plant had in process of manufacture apparatus in which between 300,000 and 400,000 horse-power was represented, and that altogether something like a million horse-power is in process of development in Canada at the present time.

After a brief reception by the officials of the Company in the office the visitors departed as they had come, some going to an afternoon of sight seeing or shopping in Montreal and others to various golf links for an afternoon of recreation. It is doubtful whether the Section has had a summer meeting that has held so much of varied interest, instruction and enjoyment.

Those in attendance were:

Dr. Bay, E. Beck, Alex. Beique, O. F. Bryant, E. A. Charlton, George Claxton, A. B. Copping, A. P. Costigane, A. Papineau-Couture, George Carruthers, D. Crabtree, H. W. French, C. Nelson Gain, J. J. Harpell, T. J. Higgins, F. H. Hunt, E. D. Hyndman, A. Jacques, B. Johnsen, S. E. Kay, R. S. Kellogg, W. Kynoch, Wm. C. Lodge, R. M. Maclean, W. G. MacNaughton, M. W. Maxwell, W. D. Mosher, J. O.'Donoghue, Paul Panzl, D. E. Read, J. O. Ross, A. W. Sykes, G. H. Tomlinson, Geo. E. Williamson, E. B. Wardle, J. N. Stephenson.

HOW TO HANDLE COMPLAINTS

A suggestion from the Direct Mail Advertising Association produces a ready reference recipe. It's worth following because frequently one or more of the vital ingredients of the pleasing whole is overlooked or forgotten.

The results of experiments show that these six steps incorporated in the letter lend enchantment to correspondence which otherwise, frequently produces irritation.

1. Admit your error at once.
2. State action taken on complaint.
3. Make your explanation and express regrets briefly.
4. Embody a strong business-building thought.
5. Show sincere appreciation for the customer's letter.
6. Strong indirect sales talk, for conclusion.

—The Crest

Sooner or later the selfish man is sure to wish that he had some standard other than his own enjoyment to look back upon.

ITEMS INSTITUTE

THE EFFECT OF FURFUROL IN MAKING PULP

Student Service Department Institute of Industrial and Domestic Arts.

Dear Sirs:

With regard to the effect of furfurol on pitch formation, as far as I know, it has never been proved that furfurol has any effect on the formation of pitch. As you know, furfurol originates with pentoses and pentosans of the wood and since the amount of this sugar is practically the same in balsam and spruce, there should be no difference in the amount of pitch formed with the two woods. Neither does the amount of petosans change with the storage of wood, while it is known that pitch troubles decrease with the amount of storing. The only change in the chemical composition of the wood which has been definitely proved takes place in the rosin and fat compound. I am not, of course, considering changes in chemical composition due to decay.

The furfurol is carried over the gas relief and is therefore found in the condensate, together with spruce turpentine, SO_2, and other compounds. Furfurol having high specific gravity will separate out at the bottom of the storage tank, while the spruce turpentine will separate out at the top. It is possible, of course, to introduce an abnormal amount of furfurol into the digester if the acid in the storage tank is allowed to go down to a very low level.

I hope you will be able to find something in this explanation which will assist your student.

Sincerely yours,

Chief Chemist.

LOSS OF HEAD DURING FLOW OF STOCK IN PIPES

Student Service Department.

Institute of Industrial & Domestic Arts

Dear Sirs:—Recently I have been attempting to carry out an experiment on the flow of pulp in pipes, and I wondered if you had ever happened to come across any data on the subject. We are measuring pressure drops along two pipes, one a 10″ groundwood line and the other an 8″ sulphite line, at different velocities. However, our apparatus is rather crude and we cannot hope for very close results. We would like to know the loss of head per 100′ of straight pipe and through elbows for sizes of pipe from 6″ to 14″, say, and for velocities ranging from about 5 to 15 or 20 ft. per sec., all for sulphite or groundwood pulp of a density somewhere around 3.5 per cent. If you have any of this information at hand or know where it could be obtained, will you be good enough to let me know? It would be of great value to us as a check on our work and a basis for the design of future pipe lines.

Yours truly,

PIPER.

A gentleman should respect himself when he is living alone, and should not begin to yield to slovenliness.

MAY EXPORTS WAY UP

According to a report issued by the Canadian Pulp and Paper Association the exports of pulp and paper in May were valued at $11,558,684 as compared with a total of $9,397,472 in the previous month.

The value of the various items exported was as under.

	May 1922		May 1923	
PAPER:	Cwts	Value	Cwts	Value
Newsprint	1,515,657	$5,361,102	1,978,016	$7,448,162
Book Paper	562	4,544	3,221	20,244
Other Papers & Mfrs.				541,122
		$5,779,669		$8,009,528
PULP:				
Sulphate	251,490	$763,505	233,771	$ 763,925
Sulphite Blchd	249,823	987,247	307,483	1,343,874
Sulphite Unblchd	225,537	594,580	326,670	912,919
Mechanical	325,119	397,829	330,399	528,438
	1,051,969	$2,743,161	1,198,323	$3,549,156

Exports were considerably greater than in May 1922. Newsprint increased by 462,359 cwts, bleached sulphite pulp by 57,660 cwts and the total value by $3,026,854.

The exports were distributed according to the following table:

	PAPER	PULP	TOTAL
U. S. A.	$7,638,802	$3,387,328	$11,026,130
U. Kingdom	131,792	27,630	159,422
All Other	238,934	134,198	373,132
	$8,009,528	$3,549,156	$11,558,684

Comparing the first two months of the current fiscal year with the corresponding two months of 1922 we have a big increase in the value of these exports for this year. For April and May 1923 the total value of the pulp and paper exports was $20,956,156 while for these two months in 1922 the total value was $15,013,189, so that this year shows an increase of nearly $6 million for the two months.

The details for the two months ending May 31st are as follows:

	Two Months 1922		Two Months 1923	
PAPER:	Cwts	Value	Cwts	Value
Newsprint	2,744,703	$9,733,063	3,545,577	$13,314,163
Book Paper	597	5,104	5,457	36,761
Other Paper & Mfrs.	—	733,565		1,104,814
		$10,471,732		$14,455,738
PULP:				
Sulphate	414,738	$1,275,120	425,870	$1,381,950
Sulphite Blchd	412,805	1,642,150	524,425	2,319,141
Sulphite Unblchd	391,883	1,047,144	634,397	1,758,771
Mechanical	454,076	577,043	650,233	1,040,556
	1,673,502	$4,541,457	2,234,925	$6,500,418

Our exports of pulpwood in these two months amounted to 187,967 cords, valued at $1,713,125 compared with 124,778 cords valued at $1,216,631 exported in the corresponding two months of 1922.

ONE DOES GIT CURIOUS

"I beg your pardon, sir, but what is your name?" the teller politely asked the man presenting a check.

"Name," echoed the indignant customer: "don't you see **my signature on the check?"**

"I do," answered the teller. "That's what aroused my curiosity."

EXPORT OF CANADIAN NEWSPRINT

A special report issued by the Canadian Pulp and Paper Association states that the exports of newsprint for the month of May amounted to 98,901 tons compared with 78,378 tons in the previous month. While this figure does not constitute a new record, it is the highest yet recorded with the exception of the month of March when the total exports were 113,450 tons.

Of the 98,901 tons exported in May, 98,531 tons was sent to the United States and only 370 tons to other countries, New Zealand taking 343 tons of this amount.

The first five months of this year have witnessed a large increase in our newsprint exports over the corresponding period of the last two years. The following table gives the figures for the present year. 1921 and 1922:

Five Months	Tons
1923	457,913
1922	370,861
1921	277,571

This year's figures show an increase over last year of 87,052 tons or 23 per cent. and over 1921 of 180,342 tons or 65 per cent.

Of the total exports in five months' period the quantities shipped to the United States were as follows:

Five Months	Tons
1923	446,713
1922	345,647
1921	252,794

Shipments to countries other than the United States were much smaller in proportion to the total this year than in either 1922 or 1921.

PAPER MILLS IN CHINA

A new paper mill, under the name of Kia Ho Paper Mill, organized by Cheng Wen-hai and other local merchants, has been registered by the Kashing Magistrate's office. The first shareholders' meeting was held on March 13, at which one quarter of the authorized capital, amounting to $32,000, was subscribed.

PAPER AND STATIONERY IN ENGLAND

In an interview with the Pulp and Paper Magazine, Mr. F. W. Field, H. M. Trade Commissioner said:

There has been little change in the paper trade since the last report.

The Swedish lock-out has now ended and no doubt prices of wood pulp will again become steady.

The exports of paper for the first three months of this year again show a notable improvement, the total export amounting to 1,021,839 cwts. compared with 404,051 cwts. in 1922 and 461,888 cwts. in 1921.

In the fourteen classified varieties enumerated under Paper and Cardboard in the monthly trade returns paper bags and roofing paper were the only descriptions of show a falling off. Concerning the markets to which printings were sent, it is eminently satisfactory to notice that 783,088 cwts. went to British possessions, while 103,434 cwts. were exported to foreign countries. Australia continues to occupy the premier position as a market for British printings, the quantity consigned to that Colony reaching 411,315 cwts. in the March quarter.

Colloid Chemical Problems In The Paper And Cellulose Industry*

By RUDOLF SIEBER

The paper industry includes the production of fibrous halfstuffs from plant material as well as the conversion of different fibers into the finished paper. To begin with, it is to be expected that, in an industry where the cellulose fiber composes the true half-stuff, problems in colloid chemistry will be encountered.

Even the raw materials, especially wood, are substances which consist almost entirely of organic colloids. The manufacture of pulp from wood consists essentially in removing the lignified substances. It is a fact that the composition of this, as yet very little known substance or substance-complex has been investigated for a long time. It may be mentioned that all investigations resting on a pure chemical basis have not given us any very definite results. Accordingly, Wislicenus has performed a very great service by being the first to apply colloid methods in investigating this substance. It is certain that more can be accomplished by these methods than by purely chemical methods. The solution of the problem should be of great importance in the manufacture of pulp, especially sulphite pulp, in which, at the present time, approximately one-half of the wood goes to waste in the spent liquor.

Although the rational production of useful substances from the spent liquor is not likely to occur, still there exists the possibility of utilizing the organic substances contained in it as a fuel. The separation of this (lignin) substance which is dissolved in a rather dilute solution partly in the crystalloidal and partly in the colloidal condition, entirely by evaporation is not by any means the best possible method. It would certainly be more advantageous to precipitate these substances by a coagulation process and then free them further from water. Application of the methods of colloid chemistry to the investigation of the composition of lignin and the behavior of its decomposition products in waste sulphite liquor might be used to advantage. The heat value of the organic substances in the waste liquor is about 7200 B. T. U. per pound.

Besides the sulphite process, there is the sulphate process in which, in contrast to the former, an alkaline solution is employed to cook the wood. Problems in this process are especially related to the volatile sulphur-containing compounds appearing in the recovery of the alkali. These compounds are of a mercaptan nature and on account of their odors make the neighborhood of such mills very disagreeable. Here it seems that colloid chemistry could be of material help. A process, recently developed by Schwalbe, has made it possible to absorb the bad smelling substances on suitable material and to oxidize them to odorless products. Practical experiments have already demonstrated the usefulness of the idea, consequently the prospects of this industry are very bright. Further study of this phenomenon should be of immense value from a practical and a theoretical standpoint.

Besides wood, other kinds of raw material are employed in the manufacture of pulp. A field, which would profit by the application of colloid chemistry, is that of converting textile fabrics to valuable paper fibres. At the present time most of our work is purely empirical. We boil rags with lime or other alkalies to remove the fat, dirt, color, etc. Whether the boiling processes now in use are really the most suitable for emulsifying these substances and removing them completely, at the same time without weakening the fibers, is very uncertain. All the more so when with the methods of treatment a very pronounced, but quite undesirable, absorption of salts occurs on the fibres, thereby resulting in manufacturing difficulties. Concerning the manner of and the conditions surrounding absorption, we are still very ignorant, and exhaustive research should prove very fruitful.

With the manufacture of half-stuffs to pulp and then to paper, the problems in colloid chemistry increase. This treatment is brought about in the beater. Besides the cutting action on the fibres, a physico-chemical change also occurs; the fibers are converted more or less completely, at the surface and often in the interior, into a hydrated condition, recognized by their slimy, mucilaginous nature. The beating under certain conditions can be carried to the point where the fibers are changed into a homogeneous mucilage, which behaves like a gel and represents a typical hydrosol. Most of the work on this subject has been concerned with the properties of pulp mucilage. Above all, exact knowledge is desired because the manufacture of different grades of paper rests on these processes and a better choice of half-stuffs for different papers would be made possible. It has been known for some time that well beaten fibers possess strong absorptive properties.

Although an investigation of the changes taking place in the beating of pulp with the aid of colloid chemistry is very necessary, there are still two other processes connected with the beater which lack explanations: the sizing and the loading of paper. By sizing is understood that process which gives to paper the property of being able to be written or printed upon. At present, sizing consists essentially in mixing rosin, completely or partly saponified, with the fibers in uniform suspension and then precipitating the rosin on the fibers with aluminum sulphate. This process, which is over one hundred years old and is of great importance to the paper industry especially on account of the possibility of obtaining a cheaper substitute for rosin, has not been clearly explained yet. Theories have been proposed by which the free rosin has been looked upon as the sizing material; others have held to the opposite view that the rosin is combined wth the aluminum hydroxide, forming the resinate, which sizes the paper. We have entirely overlooked the fact that cellulose fibers play a definite role here and, furthermore, that there is not merely a precipitation but the rosin is actually fixed on the fibers. Only recently have the principles of colloid chemistry been applied to this field. Progress in investigating the use of other sizing materials can not be expected until a more exact knowledge of rosin sizing is gained.

With the filling of paper we have the problem of correctly mixing such inorganic substances as minerals, clay, talc, gypsum, etc., with the paper stock and then maintaining certain conditions during the beating operation. This entire process has been a *terra incognita*—merely empirical rules. Given the fibers, in a suspension with clay, the problem is to fix the disperse phase on the fibres. Very little study has been carried out so that an investigation is bound to yield profitable results. We have no standard

*Zellstoff und Papier, 3, 49-51 (Mar. 1923). Translated by John L. Parsons, Hammermill Paper Co., Erie, Pa.

at present by which to judge the fitness of different clays and we take whatever is available. Only through the study of these problems can we progress, for a considerable quantity of paper is loaded and in general the losses are somewhat large.

These are some of the most essential, though by no means all, of the problems in the industry in a narrow sense. This domain also includes the manufacture of artificial silk, vulcanized fiber, cellulose films, parchment, etc. In all these branches, the methods of colloid chemistry at present play only a subbordinate role. It is indeed to be hoped that more importance be given to these meth ods in the investigation of future problems.

MONTREAL PAPER CLUB REVIVES

The Montreal Paper Club is to continue. This was decided at a luncheon held at the Queen's Hotel on June 26, under the presidency of Mr. R. M. McLean. The Club will hold the next meeting in September, when it will start with a clean slate. Moreover, judging by the expressions of opinion, there is every chance that it will be far more successful than in the past.

The chairman pointed out that there had been a lack of interest and suggested that a similar Club with a smaller membership might perhaps prove successful. It was far better to have a comparatively small number of interested members than a larger organization with a membership which was indifferent. What they wanted was members who were enthusiastic, not a lot of deadwood.

The discussion was taken part in by Messrs. E. T. Reynolds, A. L. Dawe, J. M. Hampshire, R. Hall, B. Brown, A. F. Waters, and E. Beck. The consensus of opinion was in favor of continuing the Club, it being pointed out that it had done good work in the past, despite the small attendance; that it had been the means of cultivating good fellowship; and that if it were continued with a small membership of the right type there was every reason to believe that it would become in time a strong organization.

Mr. Beck offered the Co-operation of the Canadian Pulp and Paper Association, and promised every assistance in the way of clerical work. He believed that there was no ground for being pessimistic in view of the past work, and that the Club could be of benefit to the paper trade generally.

The meeting unanimously agreed to carry on the Club, and promised their support. It was suggested that an occasional evening meeting might be held.

The following officers and committee for 1923-24 were elected President, Mr. A. L. Dawe (Canadian Export Paper Co., Ltd); vice-president, Mr. S. Rodier, (Rolland Paper Company, Ltd), executive Committee Messrs E. Beck (Canadian Pulp & Paper Association), J. Home, (Beveridge Supply Company Ltd) and E. T. Reynolds (McFarlane, Son, and Hodgson Ltd). At a subsequent meeting of the executive Mr. E. Beck was elected secretary-treasurer.

Mr. Dawe on taking the chair, remarked that they required the right type of men as members; those who would show some enthusiasm, and he felt assured that at the end of the next season they would have a Club which would represent a force in the paper trade.

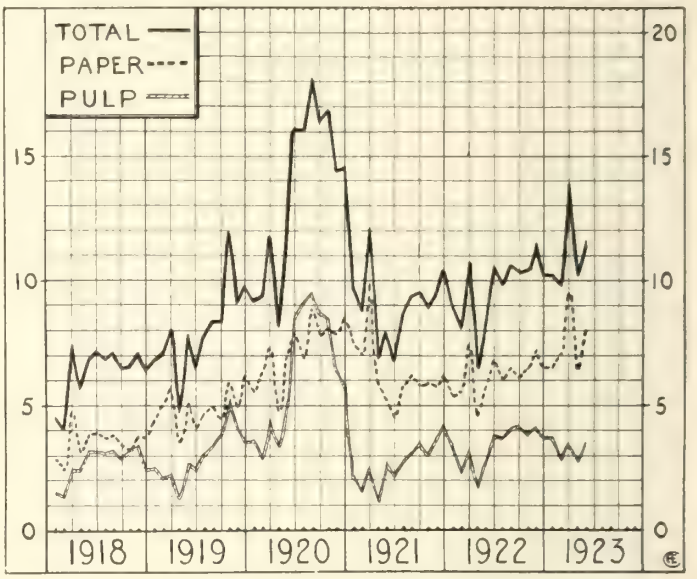
A vote of thanks was passed to the retiring officers and executive.

The more religion one has himself the more he is apt to discover it in others.

PULP AND PAPER EXPORTS IN MAY 1923

By A. E. Cadman, Canadian Pulp and Paper Association.

Exports of pulp and paper in May were valued at $11,558,684 which was an increase of $2,161,212 over the value in April. Increases over the previous month were shown in practically all grades of paper and pulp. Total paper exports were valued at $8,009,528 compared with $6,446,210 in April and total pulp exports at $3,549,156 compared with $2,951,262 in April.



The quantities and values of various grades exported during the first five months of 1923 and 1922 are shown under:

	Five Months 1922		Five Months 1923	
	Tons	Value	Tons	Value
Newsprint	370,861	$26,532,787	457,913	$34,418,896
Book (cwts)	1,913	16,852	18,704	121,395
Bond & Writing (cwts)	2,597	24,577	10,771	109,882
Kraft	5,717	892,807	8,282	1,261,096
Ground-wood	79,715	2,566,422	98,402	3,292,022
Sulphate	56,396	3,478,074	56,681	3,680,479
Sulphite Bleached	56,011	4,510,766	69,676	6,148,566
Sulphite Unbleached	55,847	3,002,132	82,447	4,434,387
Pulpwood (Cords)	386,299	3,866,188	534,618	4,758,575

NORWEGIAN MILLS CLOSED BY STRIKE

According to a cable received by the Canadian Pulp and Paper Association, the Norwegian pulp and paper mills have been closed owing to a dispute with the workers. The information is to the effect that the men walked out in sympathy with the log men and river workers, who have some grievance against the employers.

It appears that under an agreement between the men and the employers wages are to be adjusted according to the index numbers showing the cost of living. In March these figures showed a reduction of five per cent, and the employers took steps to lower the wages. This was not to the liking of the mill employees who have apparently taken advantage of some feeling caused by the action of the employers to strike in sympathy with the log men. The agreement as to wages terminates in August. The employers declare that if the men do not return to work a lock-out will be declared.

PULP AND PAPER NEWS

The interests of Mrs. Ritchie, wife of F. A. Ritchie, late President of Ritchie & Ramsay, coated paper manufacturers, have been acquired by George W. Pauline, Managing Director of the firm, and J. M. Finlay, Secretary-Treasurer. Mr. Pauline has been identified with the firm for the past eighteen years and Mr. Finlay for twenty-one years. The same policy which has characterized the company in the past will be pursued under the new arrangement and the same high grade variety of papers turned out. It is interesting to note that Ritchie & Ramsay were the first firm to start a coated paper plant in Canada. They have been in business for over thirty years. The plant is at New Toronto.

The Belleville Paper Mills, situated just north of the city of Belleville, Ont., suffered from fire on June 17. The chief and almost only loss was the burning of 300 bales of paper. It is thought that children playing with matches set fire to the paper which was piled against the mill. A bucket brigade saved the fire from spreading.

The firm of J. J. McFadden, Limited, of Spragge, Ont., has been accepted by the Ontario Government as contractors for the timber on Berth IE, in the Mississaua Forest Reserve. The district involved is 36 square miles in area, and the sale, while not unduly large, as timber limits go, is one of the biggest which the Lands Department has negotiated for some time. The McFadden Company has deposited a marked cheque for $25,000 along with its bid, and must remove the timber by April 30, 1929. The prices which the company has agreed to pay are: red and white pine, $8.50 per thousand feet; jack pine, $4.50 per thousand feet; other timber $3.50; cedar posts, 7 cents each: ties 20 cents each: spruce pulpwood, $1.55 per cord: other pulp wood, 90 cents per cord: cedar poles, 31 to 40 feet, $1: cedar poles, 40 to 50 feet, $1.50: cedar poles, over 50 feet, $2: Crown dues at the usual rates, in each case, are included.

The Strathcona Paper Company, Limited, Strathcona, Ont., manufacturers of box board, wrapping paper etc., report that the demand for sheathing paper is good and that there is also a good call for board. The company is running its machines full time and intends to install another boiler very shortly in order that more steam capacity may be secured with additional paper output. The company also intends to erect a good-sized stock room for raw material.

Machine tenders at the Port Arthur plant of the Provincial Paper Mills, Limited, hung up a new record on June 8 when they ran 118,625 pounds of pulp through the presses in an eight-hour shift. They checked in at 3 o'clock and completed the run at 11 p. m.

Lewis L. Alsted, of Appleton, Wis., has taken over the responsibility of carrying out the necessary work and has now all the right, title and interest in the Long Lake pulp and timber limit, which was awarded by the Ontario Department of Lands and Forests, in July, 1921, to J. H. Black, 36 Toronto Street, Toronto, and upon which before 1922, Mr. Black was to establish a pulp mill, situated at some point in the district of Thunder Bay and equip it. Mr. Alsted is the principal man behind the projected mill of the Great Lakes Pulp and Paper Co., at Port Arthur, Ont.

The Ontario Government awarded the Negagami River pulp and timber limit to the Transcontinental Development Company, Limited, 85 Bay Street, Toronto, on June 15, 1921. Afterwards the company's name was changed to that of the Transcontinental Paper Company. The original holders under the conditions of sale were required to begin construction of a pulp mill and carry out certain other regulations by October 3, 1921. It is now stated by the Department of Lands and Forests that, owing to the inability of the holders to locate a suitable water power on the limit, a further extension of time is being sought in the hope that negotiations may be inaugurated with the Hydro-Electric Commission that will result in a satisfactory solution of the power problem now apparently confronting the company and its development schemes.

I. H. Weldon, Toronto, President of the Provincial Paper Mills, Limited, sails on July 7, with Mrs. Weldon, for England, where it is proposed to take a motor tour through the British Isles. Incidentally, while in the Old Country, Mr. Weldon will look over the paper situation and he may also visit other paper producing countries.

A. R. McRae, at one time connected with the Victoria Paper and Twine Company, Limited, Toronto, and latterly with the Dominion Match Company, is now representing the Dominion Paper Company, Limited, Montreal. Mr. McRae's many friends were pleased to see him in Toronto a few days ago. Mr. Page, formerly with the Dominion Paper Co., is now representing the Continental Paper Products Co.

John Martin, of the John Martin Paper Company, Limited, Winnipeg, who is also connected with the Buntin Reid Company, Toronto, is spending a few days in the latter city.

The new mill of the Provincial Paper Mills, Limited, at Port Arthur, is now running at capacity and is now producing between 25 and 30 tons daily. Part of the western orders are now being filled from this plant, which means a considerable saving in freight rates. One machine has been installed and the building was constructed with a view to the adding of an additional machine when business warrants. President I. H. Weldon states that earnings were very satisfactory, for the first six months of the company's fiscal year. Provincial Paper Mills are now producing slightly better than 100 tons of paper, per day, which is the largest volume in the company's history. The new machine at Port Arthur has only been in operation for about three months, and has hardly had time to demonstrate its earning power, but with plenty of orders on hand the earnings for the past six months of the year should show an increase.

Mrs. C. H. L. Jones, wife of the General Manager of the Spanish River Pulp and Paper Mills Co., Limited, was seriously injured on Pim Street in Port Arthur when she was struck by an automobile. She was dragged along some distance and sustained severe bruises and other injuries.

E. J. Zavitz, head of the Forestry Branch of the Ontario Government, has ordered the Government's large seaplane to start on a survey of the districts in the north where forest fires are threatening. The plane will pro-

ceed north to Hearst and Cochrane. Thence it will turn towards the Quebec boundary and return south to Lake Temagami. The reports thus obtained are expected to be of valuable assistance in connection with the work of fire-fighting. In addition six smaller planes are patrolling the forest areas between Sudbury and the Great Lakes.

Latest reports received by the Matagami Pulp and Paper Company at their head office in Toronto from the Northern Ontario fire region state that so far their limits on the Matagami and Muskego Rivers had escaped the fire fiend although at one time they were in considerable danger.

George T. Mead, of Dayton, Ohio, President of the Spanish River Pulp and Paper Mills Company, Limited, together with P. B. Wilson and George R. Gray of Sault Ste. Marie, and C. E. Read of Ottawa, were in Toronto last week attending a meeting of the directors of the company.

"The Glue Pot" is out. It is published yearly by the members of the Canadian Paper Box Manufacturers' Association, and always coincident with the annual convention which is being held at Niagara Falls this year, the magazine is filled and brimming over with good wholesome humor and not a few practical ideas for the guidance of the box makers in their business and at the convention. There are also some clever drawings and pictures which aptly set off the letterpress. There is an article on "The Value of the Cost System," by Henry L. Stortz, of Philadelphia, and D. S. Porter of the Rudd Paper Box Company, Limited, Toronto, has combined wisdom and philosophy in his article dealng with "Everybody's Hour" at the convention. C. Winter Brown, of the D. F. Brown Paper Box and Paper Co., Limited, St. John, N. B. tells what is going on in the business in the Maritime Provinces and Bart Sproul, of Collet and Sproul, Toronto, and Art Allen, of Paper Sales, Limited, Toronto, each have interteresting departments. It is a bright little publication and shows how the paper box makers are competitors yet partners in the industry.

Owing to the extreme danger of forest fire conflagrations in central and southern New Brunswick, orders have been issued to the employees of the Nashwaak Pulp and Paper Company, who have engaged on pulp-peeling operations on forest lands, to desist from smoking while at work. This is the first time such precautions have been taken in this province.

Mr. Frank Hawkins, secretary of the Canadian Lumberman's Association has resigned owing to ill health, after seventeen years' service. He is succeeded by Mr. R. L. Sargent, manager of the Association's Transportation Department.

Mr. C. H. Mead, president of the Spanish River Pulp and Paper Mills, Ltd., and Mr. P. B. Wilson, vice-president, were in Montreal last week.

At a directors' meeting of the Canadian Lumbermen's Association held in Montreal last week, a resolution was passed in favor of the continuance of the manufacture and sale of oleomargarine. This is used largely in lumber camps. The executive of the Canadian Pulp and Paper Association recently passed a resolution supporting the Lumbermen's Association in their efforts to maintain the manufacture of this commodity.

Mr. Timberlake, the South African representative of John Dickinson and Co., London, England, is visiting Canada, and last week in company with Mr. W. Gorman, Montreal inspected the Mille Roches plant of the Provincial Paper Mills, Limited. Mr. Timberlake came to Canada after visiting Australia and New Zealand. He wll take a trip to the States and then return to Capetown via England.

Pulp and paper companies importing raw materials for re-manufacture are affected by the latest amendment to the Sales Tax Bill. This provides that on the importation of raw products the manufacturer on importing the raw material must pay the six per cent sales tax when the goods are taken out of bond. It is, however, provided that subsequently, when these raw materials are manufactured into a finished product and sold as such a claim may be made and realized for a refund of the six per cent sales tax collected on the raw material at the port of entry.

It is held that this will make the collection even more complicated than was at first proposed, and that it will tie up a considerable amount of capital and add to the overhead expenses, inasmuch as in some instances it is many months before the raw material is manufactured into the finished article.

According to the Hon. C. Marcil, the railway service in the Gaspe Peninsula is entirely inadequate, with the result that the lumber and pulpwood resources are not properly developed. He stated that the lumber industries in Gaspe and Bonaventure have been moved across the Baie des Chaleurs a distance of 25 to 50 miles, where the railway facilities to American and Canadian points are better. "We have pulpwood galore," asserted Mr. Marcil, "but no railway service," He asked for greater consideration in this matter.

Mr. J. Chenevert, Wayagamack sales manager has just returned from a very successful business trip through the Western Provinces and the United States.

The Wayagamack drive, probably the largest this year in the St. Maurice Valley is being seriously hindred in reaching its destination by the low water.

The North Shore Electric Power Co. of Three Rivers, have now nearly completed the extension of their street car service to the St. Lawrence Paper Mill. This will mean a great convenience to the company's employees and visitors, who hitherto have had a rather long walk to reach the plant.

HOWARD SMITH PAPER MILLS EXTENDING PLANT

The Howard Smith Paper Mills, Limited, have decided on an extensive addition and improvements at their Cornwall Ont. mill. Tenders have been called for the work, which includes a new finishing room 200 x 180 feet, three stories high; and a new machine shop 130 x 52 ft. It is also proposed to extend No. 3 and 4 machines, in order to double the capacity, and to install new water wheels in the No. 3 and 4 beater. room. Some additional beaters will be put in. The Company will in fact rearrange and extend the wet end of the mill. Besides this it is proposed later to install a soda pulp plant. The Company have just made some additions in connection with the unloading and conveying equipment. The machinery includes two five ton derricks operated by two 8 x 12 double drain hoists and a 75 h.p. vertical boiler for unloading rossed pulpwood from boats, which comes from the Gaspe limits of the company. A system of piling out and storage conveyors has been constructed at Cornwall. The complete equipment was furnished by the William Hamilton Co. Ltd., Peterborough.

Has anyone ever found in any non-religious writer a **complete** satisfaction, a final answer to questions, a perfect peace?

Raw Material

D-3 E-3 Use of Decayed Wood in Paper Making. OTTO SCHIERBECK. **Pulp & Paper** 21, 262-264 (Mar. 8, 1923). The author describes "pig rot," "feather rot," "hemlock rot," and "sapwood rot," which affect balsam, and rot caused by **Trametes pini** which attacks spruce, showing how they affect the paper making qualities of balsam and of spruce.-A.P.-C.

D-3 E-3 Decayed Wood in Paper Making. C. S. V. HAWKINGS. **Pulp & Paper** 21, 287-289 (Mar. 15, 1923). The author describes mill scale experiments carried out in January, 1922 comparing sound wood, wood containing 12% and 26% respectively of rot for the manufacture of news, sulphite, groudwood and newsprint. The results seem to indicate that 10% is a maximum figure for rotten wood if both groundwood and sulphite are supplied with wood from the same source. He then discusses the best means of making the most of the decayed wood (the proportion of which is continuously increasing in pulpwood) and suggests sorting from rotten wood and using the latter mostly for chemical pulp.-A.P.-C.

Sulphite Process

E-1 E-5 M-12 Recording and Integrating Steam Flowmeters in a Sulphite Mill. W. H. KRASKE. **Paper Trade J.** 76, No. 15, 162-164 (Apr. 12, 1923); **Paper Mill** 47, No. 15 66, 60, 74 (Apr. 14, 1923); **Paper** 31, No. 26, 51-55 (Apr. 18, 1923). The author gives flowmeter and pressure charts showing the usefulness of flowmeters in comparing steam pressure regulator versus hand control for cooking, high temperature versus low temperature, gradual "going up to pressure" versus the instantaneous method, running the digester "straight through" versus "shutting off" for a certain period, and the uselessness of preliminary steaming of the chips.-A.P.-C.

E-1 E-5 M-12 Help of Flowmeters in the Sulphite Cooking Process. HA LVAR LUNDBERG. **Paper Trade J.** 76, No. 15 165-166 (Apr. 12, 1923); **Paper Ind.** 5, 106-108 (April 1923). A discussion of the advantages of using steam flowmeters in order to obtain uniform method of cooking and uniform quality of stock.-A.P.-C.

E-4 Sulphur Burner. H. D. WELLS. U. S. pat. 1,422,801, July 4, 1922; Can. pat. 228,631, Feb. 2, 1923. A pipe agitator, partly immersed in molten sulphur, rotates within a shell, the level of the molten sulphur being regulated by means of a suitable float valve. The sulphur-melting tank is in the upper portion of the shell. The combustion chamber is placed over the front end of the melting pot and is supplied with necessary air inlets and dampers, etc. In the combustion chamber are three baffles, the first and third being disk baffles and the middle a ring baffle.-A.P.-C.

E-4 Method of Burning Sulphur. H. S. DAVIS assignor to Texas Gulf Sulphur Co. Can. pat. 229,191, Feb. 27, 1923. Sulphur containing traces of oil and similar impurities (0.1 to 0.2%) is not free burning owing to their reacting with the sulphur to form asphaltic material which spreads over the surface and which, having a very high ignition temperature, extinguishes the flame. Certain materials such as asbestos, magnesia, and certain types of porous bricks ("Nonpareil" brick), and to a lesser extent magnesium carbonate, infusorial earth and fuller's earth, have a peculiar accelerating effect on the burning of sulphur and render impure sulphur free-burning. They may be used in all forms of burners; e.g., as a lining in rotary burners.-A.P.-C.

E-4 Gas and Liquor Relief Recovery. L. B. DECKER. Can. pat. 229,288, Mar. 6, 1923. Two (or more) digesters are connected in such a manner that the gas and liquor relieved from one may be conducted into the other at the bottom. All the digesters of the system are connected to an acid storage tank into which the gases given off may be conducted as desired. It is claimed this gives a greater yield of No. 1 pulp and that the quality of the stock is better and more uniform. A.P.-C.

E-4 Sulphur Furnace. A. HANSEN. Can. pat. 228,807, Feb. 20, 1923. A ribbed rotating drum is partly immersed in molten sulphur in a suitable vessel, thus carrying the molten sulphur up into intimate contact with the combustion air. Combustion is completed in a combustion chamber as usual.-A.P.-C.

E-0 Highly Pressed Sulphite Cellulose. G. K. BERGMAN, E. ALMBERG and K. E. EKHOLM. **Pappers Och. Travarutidsk. Fur Finland. Paper** 31, No. 23, 9-12 (Mar. 28, 1923); No. 24, 9-11 (Apr. 4, 1923). Highly pressed sulphite imported from Finland into the United States was found to give trouble in breaking and bleaching. The authors investigated the properties of this class of pulps, comparing them with pulps prepared in the usual manner. From a strictly chemical standpoint (bleaching 5 hours at 40° C., with 10% of chlorine) there was practically no difference in the bleaching qualities. The variations in chemical composition were within the experimental error. Commercially, it was found that the highly pressed pulp was much more difficult to break up in the beater and more time was required to bleach it. Four out of five samples of highly pressed pulp were found to be slightly darker in color than the corresponding non-compressed pulps, and in the fifth case the colors were practically the same. There is practically no difference in color and strength between the two classes of pulp (strength tests are described in detail).-A.P.-C.

E-5 Filling Digesters with Hot Sulphite Liquor. H. CLEMM, assignor to **Zellstofffabrik Waldhof.** Can. Pat. 228,418, Jan. 30, 1923. The liquor is forced under pressure into the digester, which is closed by means of an excess pressure valve.-A.P.-C.

G-5 Centrifugal Pulp Thickener. R. C. MABRY. U.S. pat. 1,415,939, May. 16, 1922; Can. pat. 228,515, Feb. 6, 1923. The stock is fed into a rapidly rotating conical screen, the water being thrown out by centrifugal force and the thickened stock discharged at the bottom. A "Cleaning member" is provided for preventing the screen from becoming choked with the stock. It is claimed that stock can be thickened to a consistency of 10 to 18% and that the water removed is freer from fiber than by usual methods.-A.P.-C.

G — Pulp Treatment and Drying

G-10Bale Press. W. LINDEMANN. Fr. pat. 546,894, Sept. 5, 1922. **Papier** 25, 541-542 (Dec. 1922). The patent covers a portable press. The tracks on which the truck rests during the pressing stage are connected directly to the frame of the press, which does not have to be anchored to the ground. The box containing the bale before pressing can be removed after pressing without having to wait until the bale has been wired or otherwise fastened.-A.P.-C.

UNITED STATES NOTES

The Northern New York Division of the American Pulp and Paper Mill Superintendents' Association, at its annual meeting held last Thursday in the Hotel Woodstock, Watertown, N.Y., elected Homer E. Stafford, superintendent of the Kamargo Mills, Watertown, chairman of the division for the ensuing year. William J. Argy, superintendent of the Black River Mills of the St. Regis Paper Company, was re-elected secretary and treasurer. The program, which included business meetings, discussions and a banquet, was an interesting one and the meeting as a whole was most successful. Walter Rooney of the Albany Felt Company, spoke on "Paper Machine Felts," and following his talk he gave an illustrated lecture on the "Paper Industry in Japan." A paper on "Waste in Pulp and Paper Mills" by B. T. McBain of the Nekoosa-Edwards Paper Company, Ft. Edwards, Wis., was read by Secretary Argy in the absence of Mr. McBain who was unable to attend. Speakers at the banquet which was presided over by John H. O'Connell, were: Claude E. Nicely, president and general manager of the La Salle Paper Company of South Bend, Ind.; Ralph S. Baker, president of the Watertown Chamber of Commerce; H. Edmund Machold, speaker of the New York State Assembly, George W. Sisson of the Raquette River Paper Company, Mayor Robert E. Cahill and Captain Edward S. Lansing. The possibility of Canada's putting a tax on all wood shipped from Canada came under discussion at the meeting.

A 17,000 acre tract of hard wood, formerly owned by the Aldrich Paper Company in the Harrisville region of Northern New York has been purchased by J. L. Humes, a prominent Adirondack lumberman, head of the Pahud Lumber Company. The property was bought from the Aldrich Paper Company some months ago by the Oswegatchie Paper Company which was organized and incorporated last year by Samuel B. Wardwell and associates. The sale to Mr. Humes was made by the latter.

The paper industry has not suffered by the temporary setback in business, for the refusal of the manufacturers to allow a runaway price for their products has been a stabilizing factor throughout the industry, according to the monthly review of the American Paper and Pulp Association. As yet merchants have not stocked up to any large extent. Any rush of business from consumers will be reflected by orders to the mills and even new orders received specify immediate delivery. The mills had such an exceptional demand for many kinds of paper only very recently that their production was taken up for quite a long period ahead.

Nearly $8,000,000 has been paid by the United States Government to victims of the forest fires of October, 1918, according to figures given out last week by Duluth agents of the United States Railroad Administration. Vouchers for a total of $5,688,965.52 have been paid in 2,489 claims as a result of the fires that swept through Cloquet alone, and $2,138,430.79 has been paid on claims outside of Cloquet, or a total of $7,827,396.31. Only 95 claims have not yet been paid in the Cloquet district and 528 districts outside of Cloquet. The claims do not include those suits that have been filed in the district court against the United States Railroad Administration as the result of the refusal of the Government to settle.

The Carthage Sulphite Pulp and Paper Company announces that George E. Miller of Syracuse, a pioneer among Black River Valley paper makers, has been engaged to take charge of its sulphite department.

Since J. V. Baron became president of the Carthage Sulphite Pulp and Paper Company, a new line of specialties are being put out by the concern. These are high grade covers and press boards as well as stock for folders and colored tickets. Under the general supervision of P. H. Moran, general superintendent, the mills have been completely overhauled and the company will produce a very high grade of sulphite and boards in the future. The product of the sulphite mill will be handled by R. F. Hammond, Inc., New York City.

Imports of cardboard and wrapping paper, cigarette paper, writing and printing paper, including newsprint into Egypt during 1922, as reported to the Department of Commerce by Consul Lester Maynard, Alexandria, were valued at $2,700,000, as compared with $3,600,000 in 1921, and $2,000,000 in 1913. The share of the United States in these imports was insignificant, apparently owing to the impossibility of American manufacturers competing in price. Egypt annually uses about 500 tons of foreign-made cigarette paper.

J. J. Patricof, formerly president of the Waste Material Trading Corporation, New York, dealers in foreign and domestic rags, paper stock and wood pulp, is no longer connected with the company, according to an announcement issued from the offices of the concern.

Figures compiled by the New York State Conservation Commission from the reports of tree shipments from its nurseries during the spring planting season just closed show: 7,104,525 as the total number of trees shipped as compared with 3,687,360 a year ago; the total number of orders this year was 1,216 as against 567 a year ago. The Racquette River Paper Company, Adirondack Development Company and the St. Regis Paper Company planted larges numbers of trees sent them from the State's nurseries

Consul Leslie A. Davis, in a report to the Department of Commerce, states that the Finnish Woodpulp Mill Union's production of mechanical pulp last year in the eighteen mills comprising the union, was 56,681 metric tons, air-dry weight, and that of woodpulp boards (cardboard) 33,242 tons, a total production of 89,923 tons. This figure, says Consul Davis' report, does not include about 90,000 tons of woodpulp used by the paper mills belonging to the same companies that compose the union, and which, in view of the increased production of paper last year, used more than in previous years. Sales of mechanical pulp by the Union to other mills in Finland last year amounted to 13,574 tons, or about the same as in 1920 and 1921, and exports reached 39,279 tons, leaving 3,828 tons on hand January 1, 1923.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, June 26. — Conditions in the local paper trade have not changed to any extent during the past week. It is a more or less spotty market; one week will be good, followed by another of intense dullness. Orders require a considerable amount of scratching. Moreover, customers are buying in a very cautious manner, they are not inclined to purchase in large quantities. This involves more work on the part of the salesmen and an increased overhead for the firms.

A house manufacturing a paper specialty has just put on a small campaign in Montreal. Several hundred possible users were circularized, the letters being followed up by calls. It was found that most of the people circularized were not using the paper, and although of course many refused to purchase, yet the amount of new business obtained justified the expense of the campaign. The chances are that a good percentage of those who are trying out the goods will become permanent customers.

Judging from the May imports, and exports, general trade is in a healthy condition. With one exception, all the main groups show increases in exports, forest products showing up well, with a gain of over $6,000,000 as compared with the corresponding month in 1922. This group ranks next to agricultural produce, and in May was within about $2,000,000 of that total. Had it not been for the gain in forest products, the exports would have been lower than in May last year. Our imports under this heading show an increase of just over $500,000.

The demand for newsprint is still very strong, the mills continuing to run at capacity. Advertising in the United States has always an influence on the newsprint situation and if we may judge from the large amount of space being used, there will be no let-up in the call for Canadian paper. For the first five months of the year advertising was 12 per cent greater than in the corresponding period in 1922, and about 1½ per cent more than in 1920, when advertising reached its peak.

The outstanding feature of the book paper department is the withdrawal of price lists by the mills. It is understood that for some time there has been little or no profit on this class of business, owing to the high cost of production. It is probable that the withdrawal is preliminary to an advance in prices. In the meantime, the mills state that some orders are desirable and others undesirable, and having regard to this, prices will be regulated by the mills according to the value of the orders. This decision does not come as a surprise, as the mills intimated that a readjustment would come into force sooner or later.

In the paper stock section, waste paper is inclined to harden, after having had a set-back. Rags are easier, owing to larger offerings due to the importation of European rags. There is a continued firm demand for roofing felts, the outlook being very promising on account of the activity in building.

The groundwood market is stiffening slightly, owing to a scarcity of the pulp. The water conditions are unfavourable to grinding, and consequently, the amount available is not so large. In bleached sulphite, the demand is still good, with prices ruling from $85 to $100 according to grade. Sulphite is a little firmer. The exports of all pulps in May showed a gain of about $800,000.

Toronto Market News

Features of the paper market in Ontario during the past week have been a twenty per cent increase in coated boards and advice to the jobbing trade from one of the big mills of a withdrawal of all prices. It would seem as if the latter action was not necessarily a forerunner of higher prices, although undoubtedly the trend is upwards. The same step was taken recently by one of the other big manufacturing companies and in both instances it was stated that the price list withdrawal was simply preliminary to a readjustment on some lines. The lines affected in the present instance are bonds, ledgers, writings etc., although it is not stated that there will be any change immediately in these classes of paper. One or two other lines might possibly undergo a slight increase but no statement is forthcoming from the company as to what the rearrangement of quotations is likely to mean. Ontario mills manufacturing coated board, notably the Georgetown Coated Paper Mills, and Ritchie & Ramsay, have advised the jobbing trade of a jump of twenty per cent on that product, which includes translucent board, and similar lines used largely for street car advertising, etc. The higher grade of filler, which is imported from the United States, has been going up in price lately, and raw material also has undergone price increases, which accounts for the advance imposed by the Ontario mills. Business generally in this department of papermaking is keeping up well. In most other lines business is suffering the effects of the usual summer dullness in trade circles generally. Particularly is this noticeable in the jobbing end of the paper business where a fair amount of paper is being handled but with the total absence of large orders that cheer the heart of the paper salesman. The holiday season is on now which means the absence from the office of the purchasing agents of paper-using firms and it is believed that the hot season will go hand in hand with a listlessness in paper selling. The printing trade remains rather quiet in Toronto, although other centres report fair business. There is a fair call for tissues and toilets and prices are holding firm while the wrapping and kraft paper manufacturers report a slackness in demand. The book and writing mills are all running full and publishers' envelope and catalogue manufacturers are sending in good-sized requisitions to the mills. Some departments of the converting trade are quiet, but for the most part the manufacturing stationers are enjoying fairly good business.

PULP—The market for all lines of pulp appears to be easing off considerably, largely owing to the slackening off in the higher grades across the line, although so far the decrease in the pulp business in Canada has not been pronounced as in the United States. As a mat-

ter of fact there is still a fair demand for most lines of pulp by the Ontario mills, and with lots of water which prevails now the pulp makers are turning out fair sized stocks most of which is being disposed of freely. Groundwood is quoted at from $34.00 to $40.00: bleached sulphite, $90.00 to $100.00: unbleached sulphite, $65.00 to $75.00 and news grade at around $65.00.

NEW YORK MARKETS

New York, June 23—(Special Correspondence)—The paper market in New York has settled down in a manner quite characteristic of the summer season. There is a lack of important demand of broad scope; consumers are operating as buyers on a reserved scale, and while in the aggregate the movement of supplies from mills into jobbing and consuming channels is of fair volume, most individual transactions involve but small lots of paper. This is the time of the year when demand is confined almost entirely to goods immediately required by users, and printers, publishers and other large consumers of paper are not deviating from their customary course during the early summer and are placing orders only as their needs dictate.

It is true that some mills have curtailed operations. This has been due in part to a falling off of demand, and in part to manufacturers reducing production while compiling midyear inventories and making necessary repairs to mill machinery. On the whole, paper manufacturers are keeping comparatively busy for just this period of the year. Print paper mills are still running at close to full capacity; there is moderate activity among book paper mills; fine paper plants are operating on a fair scale, while coarse paper and board mills are producing at a rate fully up to normal for this season. Sentiment among manufacturers is very confident. Expectations are for a marked expansion of demand in the not distant future; most paper producers view the present lull in market activity as nothing more than to be looked for. Anticipations are that the second half of the year will prove equally as gratifyng as the first half; that the volume of business will be as large, if not larger, and that, if anything, more profit will be realized because of a better stabilization of raw material costs.

Newsprint consumption is holding up at a surprisingly high level. Publishers in New York City and throughout the country are using print paper at a rate probably never before maintained over such a long period as thus far this year, and present prospects are that there will be no let down in consumption during the summer. Just as much newsprint is being used at the moment as two or three months ago notwithstanding that demand for nearly every other kind of paper has decreased somewhat in recent weeks.

Prices of newsprint are firm to an extreme. The tone is strong, and spot shipments of standard news are freely commanding premiums. Buyers are meeting the prices asked without hesitancy, and the fact that leading manufacturers have announced there will be no advance during the remainder of the year has led to publishers contracting for forward supplies without reluctance.

Book papers also are enjoying an exceptionally good demand for the summer period. A majority of mills are contracted on the bulk of their output, and are readily disposing of most of their other output at firm prices, there being a good transient demand in company with a steady movement to contract customers. It is stated that trade magazines and fiction periodicals are well booked up on advertising over the next few months, which should result in sustaining demand for book paper. Moreover, the contracts mills have on file will absorb the greater part of their production for some time to come, so that continued activity will probably be noted in the book paper industry.

Demand for fine papers has subsided to some extent but mills are far from idle and are marketing their product at steady prices. If anything, manufacturers of fine paper are in a more favorable position today than they were a month ago. Perhaps they haven't as much business on their books but they are probably making a larger profit on the paper marketed since raw materials are being purchased at cheaper prices. Coarse papers are in spotty demand but prices show little or no change.

Box boards have held steady this week. Buying is of spasmodic character, consumers coming into evidence only when needing supplies yet manufacturers are maintaining quotations rather firm in the face of a decline in raw material. Most mills in the East are quoting $57.50 a ton f. o. b. New York on plain chip board and $60 on news board, though in some cases orders have been accepted down to $55 for both news and chip. In other words, when certain manufacturers are in want of orders they reduce their prices, and after booking all the business they want for a time they promptly mark up quotations again.

GROUND WOOD—Current demand for mechanical pulp is fair but is nothing out of the ordinary. Buying is principally against direct requirements, with consumers exhibiting no desire to anticipate their wants, so that most transactions involve comparatively small amounts of pulp. However, producers are not pressing matters and are maintaining quotations fairly well. The price commonly named by domestic grinders is $35 a ton f. o. b. pulp mills, and it is stated that the bulk of ground wood sold is bringing at least this figure although some sales at a little less have been noted. Grinders are working on a fairly active scale and evidently are producing more pulp than there is demand for, but, as is usually the case at this season, stocks are being accumulated for later in the year when droughts generally compel producers to reduce their output.

CHEMICAL PULP—A strike of operatives in the Norwegian pulp mills, resulting in the shutting down of all the plants in that country, is the outstanding development in chemical wood pulp. According to cable advices to New York pulp concerns, the workers in the pulp and paper mills of Norway have no grievances of their own but walked out on strike in sympathy with the strike of logmen or river workers, thereby obliging the mill owners to close down. It is understood that negotiations are on which will probably lead to a settlement of the trouble very shortly although there is the possibility that the labor disturbance may develop into a long-drawn-out affair similar to the strike in the Swedish pulp mills early this year. Should this happen to be so it would likely prove a boon to producers of bleached sulphite in the United States and Canada since the supply of this kind of pulp which paper manufacturers in America depend on from Norway would be cut off at least temporarily.

There is not much activity in chemical pulp at the moment. Papermakers are buying in hand-to-mouth

volume only, and most of them are managing to get along with contract supplies in such a way as to preclude any necessity of purchasing in the open market. Quotations are fairly well maintained by both importers and domestic producers, yet proof is not wanting that sellers frequently are granting price concessions to secure orders. This makes for some irregularity in prices and naturally prompts buyers to look for pulp at reductions.

RAGS—The market for papermaking rags is decidedly quiet. There is some spasmodic buying being engaged in by consumers, but demand in the aggregate is far from important volume, and the price trend is still downward. Dealers put much stress on the decrease in collections, as well as in imports, since prices have worked down to low levels, and argue that any expansion of demand can only send prices higher almost instantly. On the other hand, it is admitted that some sizeable accumulations of both foreign and domestic rags are in the hands of dealers and that it will require quite a little buying on the part of mills to remove these stocks.

Roofing rags have sold down to one cent per pound f. o. b. New York for No. 2 packing of domestic origin, and it is said that foreign dark cottons have been bought by felt mills at as low as 1.25 cents a pound ex dock New York. No. 1 roofing stock is relatively firmer, dealers asking 1.25 cents for domestic packing at shipping points and at least 1.45 cents on the dock for foreign linsey garments. New cuttings are in slow demand and those buyers who are operating in the market are generally securing the rags desired at price concessions. Old white rags are quiet, and buying interest in blue rags has noticeably cooled. Sales of repacked thirds and blues at 2.50 cents per pound at dealer's shipping point have been reported, while miscellaneous blues have sold at 2 cents a pound and probably at less.

PAPER STOCK — It appears as if the decline in old paper values has been checked, temporarily at least. This has been brought about, however, more because of decrease in collections, due to the low prices obtaining, than to any improvement in demand from consuming sources. Dealers and packers evidently are receiving smaller supplies and therefore are enabled to hold out for firmer prices, and the changes that have occurred in market levels this week have been narrower than in any week in several months.

No. 1 mixed paper is selling at about 70 cents a hundred pounds f. o. b. New York, and folded newspapers at 80 cents. Probably buyers have bettered these figures in some cases, but dealers are growing stronger in their demands day by day and are mostly insisting on at least these rates. Shavings have sold at 3.25 cents a pound for No. 1 soft white New York, and 4.15 cents for No. 1 hard white shavings. Heavy magazines are bringing around 2.65 cents a pound at shipping points, and mixed books about 2.40 cents. Old kraft paper is steady at 2 cents per pound for strictly No. 1 packing, and manila papers are fetching previous prices.

OLD ROPE AND BAGGING—Paper manufacturers are buying old rope in a limited manner and seem to be getting the supplies wanted at their own prices. About 5.75 cents a pound at dealers' points is the market basis generally named on No. 1 domestic manila rope, with the foreign article selling at approximately the same price. Old bagging is quiet and irregular in price, quotations depending on their source and the

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quality of the bagging involved. No. 1 scrap burlap is available at 1.15 to 1.25 cents a pound f. o. b. New York, and bagging for roofing paper mills at 80 to 85 cents a hundred pounds New York.

A NEW PUMP

A catalog has been received No. Bulletin O-1 from the Frederick Iron & Steel Company, Frederick, Maryland. This publication describes the Frederick single suction, heavy duty, centrifugal pump which has been developed for use in pulp and paper mills. It is stated that efficiencies of 60 to 65 per cent are obtained under actual running conditions when handling pulp at a consistency of about 3 per cent, and that stock at consistencies of 4 to 4½ per cent can be handled by the pump with minimum power consumption. A diagram is shown illustrating the operating characteristics of an 8 inch pump running at 1000 r.p.m. for pulp at a consistency of 2 per cent.

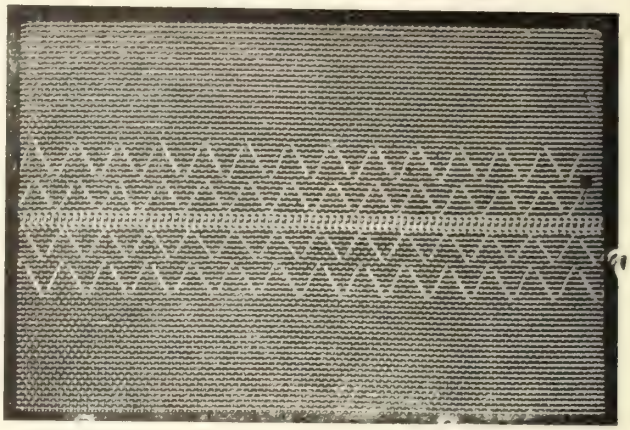
LIST OF CHEMICALS

The National Research Council has just issued its second revision of the list of fine and research chemicals. This is their Bulletin No. 44 for which a price of 50 cents is asked. It may be had by addressing The National Research Council, 1701 Massachusetts Ave., Washington, D. C. After an interesting introduction giving reasons why research chemicals are so important, there is given a list of manufacturers and distributors of these materials, a list of research chemicals, a list of biological stains and indicators, a list of vital stains and a list of hydrogen iron indicators, all of which is very complete.

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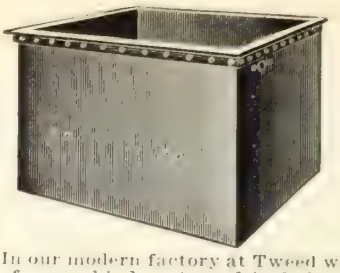
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Buyers who are unable to find in the classification here given such machinery or supplies as they desire are invited to write Service Department, Pulp and Paper Magazine, Gardenvale, Que., who can, in all probability, refer them to proper sources.

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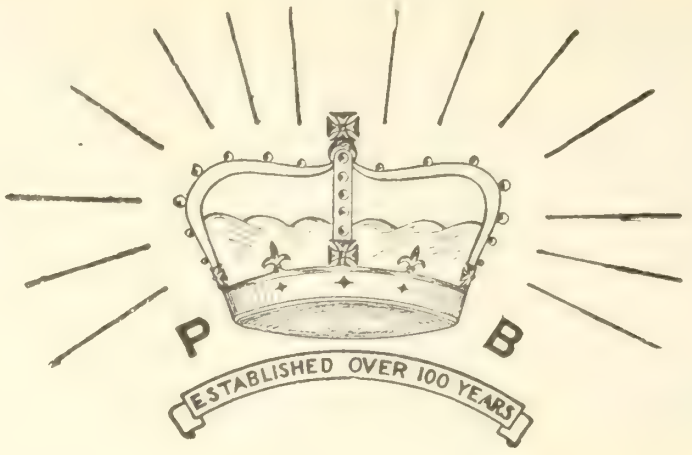
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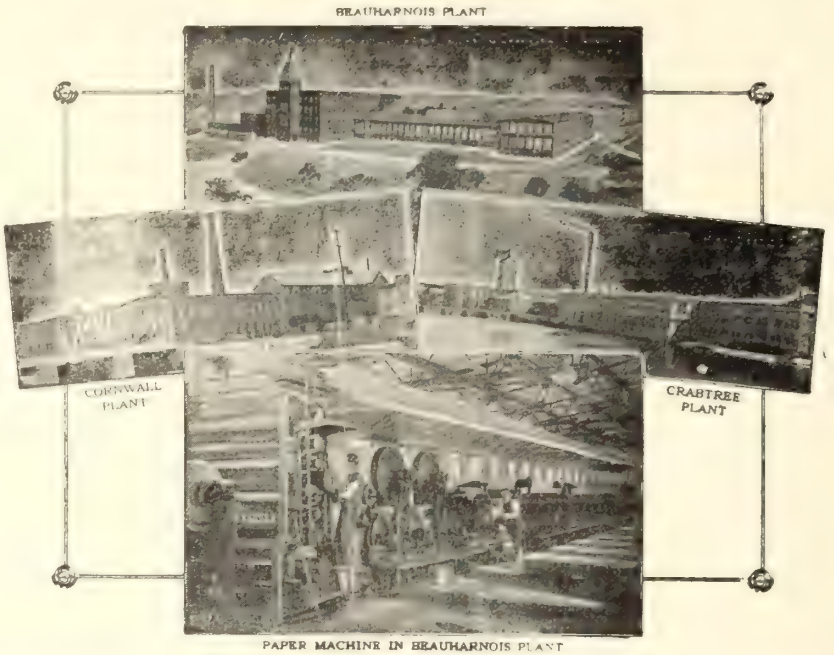
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Price Bros. & Co., Ltd.
Reid, C. de Wolf.

Genuine Vegetable Parchment:
Beveridge Supply Co., Ltd.
Can. Vegetable Parchment Co., Ltd.
Garden City Paper Mills Co., Ltd.
Victoria Paper & Twine Co., Ltd.

Greaseproof Paper:
Beveridge Supply Co., Ltd.
Can. Vegetable Parchment Co., Ltd.
Diamond State Fibre Co., of Can., Ltd.
Garden City Paper Mills Co., Ltd.
Victoria Paper and Twine Co., Ltd.

Groundwood Pulp:
Abitibi Power & Paper Co., Ltd.
Acer, J. H. A. & Co., Ltd.
American Woodpulp Corp.
Brompton Pulp & Paper Co., Ltd.
Donnacona Paper Co.
Henry Atkinson.
John C. Christie Co.
M. Gottesman & Co., Ltd.
Interstate Pulp & Paper Co., Inc.
Laurentide Co., Ltd.
Lagerloef Trading Co., Inc.
Price Bros. & Co., Ltd.
Relph, Darwen & Pearce
St. Maurice Paper Co.
Spanish River Pulp & Paper Mills.

Kraft Paper:
Acer J. H. & Co., Ltd.
Bathurst Lumber Co., Ltd.
Beveridge Supply Co., Ltd.
Brompton Pulp & Paper Co., Ltd.
Dryden Pulp and Paper Co., Ltd.
Gottesman & Co., Inc.
Price & Pearce, Ltd.
Victoria Paper & Twine Co., Ltd.
Wayagamack Pulp & Paper Co., Ltd.

Lumber Pulp & Paper Co.
Brompton Pulp & Paper Co.
Price Bros & Co., Ltd.

Mill Wrappers:
Acer, J. H. & Co., Ltd.
Brompton Pulp & Paper Co.
Eddy, E. B. & Co., Ltd.
Price Bros. & Co., Ltd.

Netting Locomotive Stock:
Hendrick Manufacturing Co.

Newsprint:
Abitibi Power & Paper Co., Ltd.
Belgo Paper Co.
Beveridge Supply Co., Ltd.
Brompton Pulp & Paper Co., Ltd.
Dryden Pulp & Paper Co., Ltd.
Eddy E. B. & Co., Ltd.
Ford, J. & Co.
M. Gottesman & Co.
Laurentide Co., Ltd.
Patton, J. F., Inc.
Price Bros & Co., Ltd.
Spanish River Pulp & Paper Mills.
St. Maurice Paper Co.

Roofing:
The Barrett Co., Ltd.
Beveridge Supply Co., Ltd.
Ford, J. & Co.
Interstate Pulp & Paper Mills Co., Inc.
Spanish River Pulp & Paper Mills

Parchment:
Beveridge Supply Co., Ltd.
Can. Vegetable Parchment Co., Ltd.
Garden City Paper Mills Co., Ltd.
Victoria Paper & Twine Co., Ltd.

Specialities:
Beveridge Supply Co., Ltd.
Diamond States Fibre Co., of Can., Ltd.
Can. Nashua Paper Co., Ltd.
Can. Vegetable Parchment Co., Ltd.
Garden City Paper Mills Co., Ltd.
Price Bros & Co., Ltd.
Howard Smith Paper Mills.
Victoria Paper & Twine Co., Ltd.

Soda Pulp:
M. Gottesman & Co., Inc.

Soda Recovery Systems:
Swenson Evaporator Co.

Sulphate Pulp (Kraft):
American Woodpulp Corp.
Bathurst Lumber Co., Ltd.
Brompton Pulp & Paper Co., Ltd.
Gottesman, M. & Co., Inc.
Dryden Pulp & Paper Co., Ltd.
Lagerloef Trading Co., Inc.
Wayagamack Pulp and Paper Co., Ltd.

Sulphate Mill Equipment:
Swenson Evaporator Co.

Sulphite Pulp:
Abitibi Power & Paper Co., Ltd.
Acer, J. A. & Co., Ltd.
American Woodpulp Corp.
Donnacona Paper Co.
M. Gottesman & Co., Inc.
Lagerloef Trading Co., Inc.
Laurentide Co., Ltd.
Mattagmi Pulp & Paper Co., Ltd.
Price Bros & Co., Ltd.
Riordon Sales Co., Ltd.
Spanish River Pulp & Paper Mills, Ltd.
St. Maurice Paper Co.
Howard Smith Paper Mills

Tissue and Toilet:
Beveridge Supply Co., Ltd.
Can. Vegetable Parchment Co., Ltd.
Garden City Paper Mills Co., Ltd.
Interlake Tissue Mills Co., Ltd.
Victoria Paper & Twine Co., Ltd.

Wrapping:
Beveridge Supply Co., Ltd.
Brompton Pulp & Paper Co., Ltd.
Can. Vegetable Parchment Co., Ltd.
Dryden Pulp & Paper Co., Ltd.
Eddy E. B. & Co., Ltd.
Garden City Paper Mills Co., Ltd.
Interlake Tissue Mills Co., Ltd.
Spanish River Pulp & Paper Mills
Victoria Paper & Twine Co., Ltd.
Wayagamack Pulp & Paper Co., Ltd.

Sulphite Mitscherlich:
Acer, J. H. & Co., Ltd.
American Woodpulp Corp.
Pulp and Paper Trading Co.

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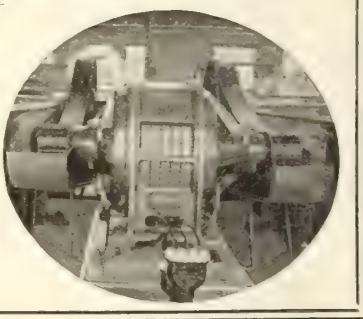


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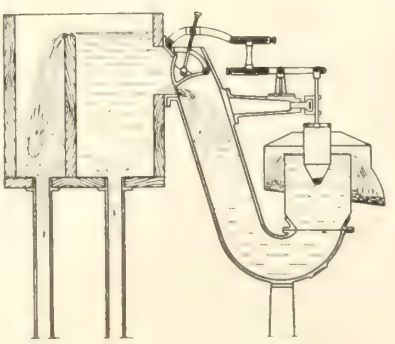
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E. B. Eddy Co., Ltd.
Victoria Paper & Twine Co., Ltd.

Parchment Paper:
Can. Vegetable Parchment Co., Ltd.

Paper Cores:
Elixman Paper Core Co.

Paper Cutting Machines:
Cameron Machine Co.
Walmesley, Charles & Co., Ltd.

Paper and Pulp Machinery:
American Voith Contact Co., Inc.
Beveridge Supply Co., Ltd.
Bertrams, Ltd.
Black-Clawson Co.
Boving Hydraulic & Eng. Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Downingtown Mfg. Co.
Hamilton Co., Ltd., Wm.
Hydraulic Machinery Co., Ltd.
Johnson Wire Works, Ltd.
Norwood Engineering Co.
Mackinnon Steel Co., Ltd.
McAvity & Sons, Ltd., T.
Mills Works & Machinery, Ltd.
Morrison, J. L. Co.
Port Arthur Shipbuilding Co., Ltd.
Pulp and Paper Mill Accessories, Ltd.
Pusey & Jones Co.
Sherbrooke Machinery Co., Ltd.
Stebbins Eng. & Mfg. Co.
Ticonderoga Machine Works
Walsh Plate & Structural Works, Ltd.
Walmsley, Chas. & Co.
Waterous Engine Works Co., Ltd.
Westbye, P. P.

Paper Stock:
Pulp & Paper Mill Accessories, Ltd.

Paper Testers:
Canadian Fairbanks-Morse Co., Ltd.
Waterous Engine Works Co., Ltd.

Penstocks:
Dominion Engineering Works, Ltd.
Hamilton, William Co., Ltd.
Hendrick Manufacturing Co.
MacKinnon Steel Co., Ltd.
Walsh Plate & Structural Works, Ltd.
White, W. H.

Penstocks, Wood Stave:
Canadian Pipe Company, Ltd.
Pacific Coast Pipe Co., Ltd.
White, W. H.

Pillow Blocks:
Canadian Fairbanks-Morse Co., Ltd.
Canadian Link-Belt Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Victoria Foundry Co., Ltd.
Waterous Engine Works Co., Ltd.

Pipe — Riveted:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.

Pipe — Wood Stave:
Canadian Pipe Company, Ltd.

Pipes — Brass & Copper:
Tallman Brass & Metal Co., Ltd.

Piping — High Pressure:
Canadian Fairbanks-Morse Co., Ltd.
Crane, Ltd.
McAvity & Sons, Ltd., T.
Northern Foundry & Machine Co.

Piping Hydraulic:
Canadian Fairbanks-Morse Co., Ltd.
Dodge Manufacturing Co.
Hydraulic Machinery Co., Ltd.

Plate and Tank Works:
Can. Des Moines Steel Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Dominion Engineering Works, Ltd.
Goldie & McCulloch Co., Ltd.
Hamilton, William Co., Ltd.
Hendrick Manufacturing Co.
Horton Steel Works, Ltd.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Walsh Plate & Structural Works, Ltd
Waterous Engine Works Co., Ltd.

Plates — Calenders:
Norwood Engineering Co.

Pneumatic Collecting and Conveying Systems:
Sturtevant, B. F. Co. of Canada, Ltd.

Pneumatic Thickners:
Sherbrooke Machinery Co., Ltd.
Waterous Engine Works Co., Ltd.

Pneumatic Tools:
Canadian Ingersoll-Rand Co., Ltd.

Power Factor Correcting Devices:
Griswold & Co.

Power Condensers:
Griswold & Co.

Presses:
Boving Hydraulic & Eng. Co., Ltd.
Canadian Ingersoll-Rand Co. Ltd.
Hydraulic Machinery Co., Ltd.
Northern Foundry & Machine Co.
Port Arthur Shipbuilding Co., Ltd.

Press Rolls:
Bertrams, Ltd.
Dominion Engineering Works, Ltd.
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Sherbrooke Machinery C., Ltd.
Waterous Engine Works Co., Ltd.

Pressure Tanks:
Steel Trough & Machine Co., Ltd.

Pulleys:
Boving Hydraulic & Eng. Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Canadian Link-Belt Co., Ltd.
Dominion Engineering Works, Ltd.
Hamilton, William Co., Ltd.
Northern Foundry & Machine Co., Ltd
Port Arthur Shipbuilding Co., Ltd.
Victoria Foundry Co., Ltd.
Waterous Engine Works, Co. ,Ltd.

Pulp Slashers:
Hamilton, William Co., Ltd.

Pulp Stones:
American Stone Co., Inc.
Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
International Pulp Stone Co.
Lombard & Co.
Miramichi Quarry Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.
Smallwood Stone Co.
Smallwood-Low Stone Co.

Pulp Stone Burrs:
Can. Fairbanks-Morse Co., Ltd.

Pulp Thickeners:
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.
Sherbrooke Machinery Co., Ltd.

Pulp Wood:
Crittsinger, Burt C.

Pumps:
Bertrams, Ltd.
Boving Hydraulic & Eng. Co., Ltd.
Can. Fairbanks-Morse Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Dominion Engineering Works, Ltd.
Downingtown Mfg. Co.
Goldie & McCulloch Co., Ltd.
Goold Shapley & Muir Co., Ltd.
Hydraulic Machinery Co., Ltd.
Hamilton, Wm. Co., Ltd.
Harland Engineering Co., Ltd.
Lawrence Machine Co.
McAvity T. and Son.
Northern Foundry & Machine Co.
Ontario Wind Engine and Pump Co., Ltd.
Peacock Bros., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Sherbrooke Machinery Co., Ltd.
Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co., Ltd.
Weir, Ltd., G. & J.

Pumps — Stock:
Canadian Fairbanks-Morse Co. Ltd.

Pumps — Boiler Feed:
Canadian Allis-Chalmers, Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Goldie & McCulloch Co., Ltd.
Harland Engineering Co., Ltd.
McAvity, T. and Sons, Ltd.
Northern Foundry & Machine Co., Ltd

Pyrometers:
The Bristol Co.

Rag Cutter Knives:
Beveridge Supply Co., Ltd.
J. W. Bolton & Sons, Inc.
Pulp & Paper Mill Accessories, Ltd.

Rails: — Re-laying:
Canadian Equipment Co., Ltd.
Gartshore, J. J.

Recording Ammeters:
The Bristol Co.

Recording Instruments:
Canadian Fairbanks-Morse Co., Ltd.
The Bristol Co.
Peacock Bros., Ltd.

Recording Wattmeters:
The Bristol Co.

Refiners:
American Voith Contact Co., Inc.
Bertrams, Ltd.
Boving Hydraulic & Eng. Co., Ltd.
Can. Fairbanks-Morse Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Sherbrooke Machinery Co., Ltd.
Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co., Ltd.

Regulators — Steam:
Beveridge Supply Co., Ltd.
Pickles, W. F.
The Under-Feed Stoker Co. of Canada Limited.

Regulators:
Mills Works & Machinery, Ltd.
The Under-Feed Stoker Co. of Canada Limited.

Reverse Gears:
Canadian Fairbanks-Morse Co., Ltd.
Russel Brothers.

Rock Drills:
Canadian Ingersoll-Rand Co., Ltd.

Rods—Copper, Brass and Bronze:
Imperial Trading Co.
Tallman Brass & Metal, Ltd.

Rods — Welding:
Tallman Brass & Metal, Ltd.

Roll-Winding Machines:
Cameron Machine Co.
Port Arthur Shipbuilding Co., Ltd.

Roofings — Plastic and Liquid:
Barrett Co., Ltd.
Beveridge Supply Co., Ltd.
Can. Johns-Manville Co., Ltd.
Reed & Co., Ltd., Geo. W.

Rope:
Jones & Glassco.
Goldie & McCulloch Co., Ltd.

Rosin Size:
Hercules Naval Stores
Vera Chemical Co. of Canada, Ltd.
Wilson Paterson Co.

Rotary Cutter Knives:
J. W. Bolton & Sons, Inc.
Pulp and Paper Mill Accessories, Ltd.

Rotary Sulphur Furnaces:
MacKinnon Steel Co., Ltd.
Stebbins Eng. & Mfg. Co.

Safes:
Can. Fairbanks-Morse Co., Ltd.
Goldie & McCulloch Co., Ltd.

Salt:
The Canadian Salt Co., Ltd.

Salt Cakes:
M. Gottesman & Co., Inc.
The Kalbfleisch Corporation.

Save-Alls:
Canadian Ingersoll-Rand Co., Ltd.
MacKinnon Steel Co., Ltd.
Pulp and Paper Mill Accessories, Ltd.
Port Arthur Shipbuilding Co., Ltd.
Sherbrooke Machinery Co., Ltd.
Waterous Engine Works, Co., Ltd.

Slitters and Rewinders:
Cameron Machine Co.
Port Arthur Shipbuilding Co., Ltd.

Saw Frames:
Can. Fairbanks-Morse Co., Ltd.
Goold Shapley & Muir Co., Ltd.
Ontario Wind Engine and Pump Co. Ltd.
Waterous Engine Works, Co., Ltd.

Scales:
Can. Fairbanks-Morse Co., Ltd.
International Bus. Machine Co., Ltd.

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Union Screen Plate Co. of Canada
Waterous Engine Works, Co., Ltd.

Screens:
American Voith Contact Co., Inc.
Bertrams, Ltd.
Boving Hydraulic and Eng. Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Can. Fairbanks-Morse Co., Ltd.
Can. Link-Belt Co., Ltd.
Hamilton, William Co., Ltd.
Hendrick Manufacturing Co.
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Pulp and Paper Mill Accessories, Ltd.
Sherbrooke Machinery Co., Ltd.
Walmesley, Charles & Co., Ltd.
Waterous Engine Works, Co., Ltd.
Westbye, P. P.

Separators — Oil:
Canadian Fairbanks-Morse Co., Ltd.
Goldie & McCulloch Co., Ltd.

Separators — Steam:
Canadian Fairbanks-Morse Co., Ltd.
Crane Co., Ltd.
Peacock Bros., Ltd.

Shafting:
Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works Ltd.
Northern Foundry & Machine Co., Ltd.
Waterous Engine Works, Co., Ltd.

Sheet Lead:
The Canada Metal Co., Ltd.

Sheets—Copper, Brass and Bronze:
McAvity & Sons, Ltd., T.
Tallman Brass & Metal, Ltd.

Sheet Samplers:
John Date.

Shingle Machines:
Canadian Fairbanks-Morse Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.

Shower Pipes:
Dominion Engineering Works, Ltd.
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.

Shredders:

Size:
Vera Chemical Co., Ltd.

Slab Chippers:
Boving Hydraulic & Eng. Co., Ltd.
Waterous Engine Works, Co., Ltd.

Slitters and Re-Winders:
Bertrams, Ltd.
Cameron Machine Co.
Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Langston Co., Samuel M.
Morrison, The J. L. Co.
Ticonderoga Machine Works.
Walmsley, Charles & Co., Ltd.

Slitting and Roll-Winding Machines:
Cameron Machine Co.

Sinks & Tops—Laboratory, Acid Proof:
Alberene Stone Co.

Smelter Lining:
Alberene Stone Co.
Beveridge Supply Co., Ltd.

Smoke Stacks:
Can. Des Moines Steel Co., Ltd.
Dominion Engineering Works, Ltd.
Hamilton Co., Wm.
Hendrick Manufacturing Co.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
The Steel Trough & Machine Co., Ltd.
Waterous Engine Works, Co., Ltd.

Snow Plows:
Canadian Equipment Co., Ltd.

Soda Ash:
Wilson, Paterson Co.

Soot Cleaners:
Beveridge Supply Co., Ltd.

Solder:
Canada Metal Co.
McAvity T. & Son.
Tallman Brass & Metal, Ltd.

Spiral Conveyors:
Canadian Fairbanks-Morse Co., Ltd.
Can. Link-Belt Co., Ltd.
Waterous Engine Works, Co., Ltd.

Splicing Tissue:
Bemis Manufacturing Associates.

Splitters:
Hamilton, William Co., Ltd.

Split Pulleys—Wood and Steel:
Canadian Fairbanks-Morse Co., Ltd.
Waterous Engine Works Co., Ltd.

Sprinkler Tank:
Can. Des. Moines Steel Co., Ltd.
Hendrick Manufacturing Co.

Sprocket:
Canadian Fairbanks-Morse Co., Ltd.
Can. Link-Belt Co., Ltd.
Hamilton Gear & Machine Co.
Hamilton, William Co., Ltd.
Northern Foundry & Machine Co.
Waterous Engine Works Co., Ltd.

Stacks:
Dominion Engineering Works, Ltd.
Hamilton, William Co., Ltd.
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.

Stackers:
Canadian Link-Belt Co., Ltd.

Tanks — Iron and Steel:
MacKinnon Steel Co., Ltd.
Walsh Plate &Structural Works, Ltd.
Waterous Engine Works, Co., Ltd.

Steam Appliances:
Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
McAvity, T. and Son.
Pulp & Paper Mill Accessories, Ltd.
Waterous Engine Works, Co., Ltd.

Steam Engines:
Port Arthur Shipbuilding Co., Ltd.
Sturtevant Co. of Canada, Ltd., B. F.
Walmsley, Charles & Co., Ltd.

Steam Regulator:
Beveridge Supply Co., Ltd.
Crane Co., Ltd.
McAvity, T. & Son.

Steam Specialities:
Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Crane Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.
Waterous Engine Works Co., Ltd.

Steam Shovels:
Canadian Equipment Co., Ltd.

Steel Barrels:
Dominion Engineering Works, Ltd.

Steel Factory Equipment:
Steel Trough & Machine Co., Ltd.

Steel Plate Construction:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.

Steel Storage Tanks:
Steel Trough & Machine Co., Ltd.

Steel Shop Boxes:
Steel Trough & Machine Co., Ltd.

Steam Turbines:
Canadian Fairbanks-Morse Co., Ltd.
Goldie & McCulloch Co., Ltd.
Sturtevant, B. F. Co. of Canada, Ltd.

Stokers—Mechanical:
Babcock & Wilcox, Ltd.
Combustion Engineering Corporation, Ltd.
The Under-Feed Stoker Co. of Canada, Limited.

Stones—Pulp:
American Stone Co.
Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
International Pulp Stone Co.
Lombard & Co.
Miramichi Quarry Co.
Pulp & Paper Mill Accessories, Ltd.
Smallwood Stone Co.
Smallwood-Low Stone Co.

Stoneware—Chemical, Acid-Proof:
Alberene Stone Co.
Beveridge Supply Co., Ltd.

Stop Log Winches:
Dominion Engineering Works, Ltd.
Hamilton Co., Wm.
Northern Foundry & Machine Co., Ltd

Strainers—Water:
Can. Link-Belt Co., Ltd.
Babcock & Wilcox, Ltd.

Straw Cutters:
Bertrams, Ltd.

Can. Des Moines Steel Co., Ltd..
Dominion Engineering Works, Ltd.
MacKinnon Steel Co., Ltd.

Structural Steel Works:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.
Walsh Plate & Structural Works, Ltd.

Stuff Chests:
Can. Des Moines Steel Co., Ltd.
Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co., Ltd.

Suction Rolls:
Dominion Engineering Works, Ltd.
Hydraulic Machinery Co., Ltd.

Sulphate of Alumina:
H. D. Pochin & Co., Ltd.
Gottesman, M. & Co., Inc.
Imperial Trading Co.
The Kalbfleisch Corporation.
Wilson—Paterson Co.

Sulphite Mill Equipment:
Alberene Stone Co.
Beveridge Supply Co., Ltd.
Dominion Engineering Works, Ltd.
Hamilton, William Co., Ltd.
Hydraulic Machinery Co., Ltd.
MacKinnon Steel Co., Ltd.
McAvity, T. & Son.
Port Arthur Shipbuilding Co. Ltd,
Walsh Plate & Sttructural Works, Ltd
Waterous Engine Works, Co., Ltd.

Sulphite Pulp:
Mattagami Pulp & Paper Co., Ltd.

Sulphate Mill Equipment:
Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Hamilton, William Co., Ltd.
MacKinnon Steel Co., Ltd.
McAvity, T. & Son.
Port Arthur Shipbuilding C.o, Ltd.
Stebbins Eng. & Mfg. Co.
Texas Gulf Sulphur Co.
Walsh Plate & Structural Works, Ltd.
Waterous Engine Works, Co., Ltd.

Sulphite Mitscherlich:
M. Gottesman & Co.

Sulphur:
Union Sulphur Co.
Texas Gulf Sulphur Company.

Sulphur Burners:
Hydraulic Machinery Co., Ltd.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Stebbins Eng. & Mfg. Co.
Walsh Plate & Structural Works, Ltd
Waterous Engine Works Co., Ltd.

Superheaters—Steam:
Babcock & Wilcox, Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Goldie & McCulloch Co., Ltd.

Switchboards:
Canadian Fairbanks-Morse Co., Ltd.
Canadian General Electric Co., Ltd.
Harland Eng. Co., Ltd.
Northern Electric Co., Ltd.

Tanks:
Canadian Ingersoll-Rand Co., Ltd.
Can. Des Moines Steel Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Canadian Pine Co., Ltd.
Dominion Engineering Works,. Ltd.
Goldie & McCulloch Co., Ltd.
Goold Shapley & Muir Co., Ltd.
Hamilton, Wm. Co., Ltd.
Hendrick Manufacturing Co.
Ontario Wind Engine and Pump Co. Ltd.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Pacific Coast Pipe Co., Ltd.
Reed Co., Ltd., Geo. W.
The Steel Trough & Machine Co., Ltd.
Toronto Iron Works, Ltd.
Victoria Foundry.

Tanks—Acid:
Hendrick Manufacturing Co.
White, W. H.
Walsh Plate & Structural Works, Ltd.

Tanks — Lead Lined:
Barber, W. J. & Co.

Laurentide Company,

Limited

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MILL SUPPLIES. — Continued.

Tanks: Iron & Steel:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.

Tanks — Welded:
Can. Des Moines Steel Co., Lttd.
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.

Tanks — Ore:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.
Waterous Engine Works, Co., Ltd.

Tanks — Storage:
Hendrick Manufacturing Co.
Ontario Wind Engine and Pump Co. Ltd.
Port Arthur Shipbuilding Co., Ltd.

Tanks — Wood:
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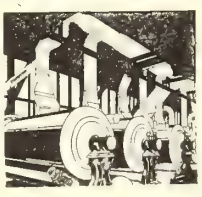
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ALPHABETICAL LIST OF ADVERTISERS

See Classified List on Page 73.

Unpaged advertisements appear in every other issue

A

Alberene Stone Co., Ltd. 72
Abitibi Power & Paper Co. Ltd. .. 84
Acer, J. A. H. & Co., Ltd. 74
American Voith Contact Co., Inc. ..
American Stone Co. 24
American Woodpulp Corporation .. 24
Avery, Limited 11

B

Babcock & Wilcox 1
Barrett Co., Ltd., The .. ..
Barber, W. J. & Co., Ltd. .. ..
Bathurst Company, Ltd. 82
Bates & Innes, Ltd. 25
Bemis Manufacturing Association ..
Bertrams, Limited .. ..
Belgo Paper Co., Ltd., The 82
Beveridge Supply Co., Ltd. 28
Black-Clawson Co., The .. ..
Boivin, Louis 8
Bolton, John W. & Sons, Inc. 26
Boving, Hydraulic & Engineering .. Company, Ltd. 12
Bristol Co., The 80
Brompton Pulp & Paper Co., Ltd. .. 82
Burgess, E. T. 36

C

Canada Metal Co., Ltd. 17
Cameron Machine Co. 37
Canadian Combustion Co., Ltd. 12
Canadian Barker Co. 10
Canada Foundries & Forgings, Ltd. 72
Canadian Des Moines Steel Co. ,Ltd. 87
Canadian Elixman Co., Ltd. 19
Canadian Equipment Co., Ltd. .. ..
Canadian Fairbanks-Morse Co., Ltd. 32
Canadian Ingersoll-Rand Co., Ltd. 5
Canadian Mead-Morrison Co., Ltd. . 17
Canadian Milk Products, Ltd. .. ..
Canadian Johns-Manville Co., Ltd. ..
Canadian Nashua Paper Co., Ltd. .. 86
Canadian Paperboard Co., Ltd. 24
Canadian Link- Belt Co., Ltd. .. ..
Canadian Robert Dollar Co., Ltd. ..
Canadian Pipe Co., Ltd. .. ..
Canadian Sirocco Co., Ltd. .. .. ..
Canadian SKF Co., Ltd. .. ..
Canadian Vegetable Parchment Co., Limited 74
Canadian Westinghouse Co., Ltd. ..
Carey, Jas. L. 22
Capital Wire Cloth & Mfg. Co., Ltd. 26
Christie, George, Ltd. .. ..
City of Hull .. ..
Clayton, Neil & Jones, Ltd. .. .. ..
Combustion Engineering Corporation Limited .. ..
Crane, Ltd. .. ..
Critsinger, Burt Co., Inc. .. ..
Cleveland Stone Co., The .. ..

D

Date, John .. ..
Deitcher Brothers 87
Dept. of Lands, Forests & Mines Ontario 4
Dodge Mfg. Co. of Canada, Ltd. ..
Dominion Belting Co. .. ..
Dominion Engineering Works, Ltd. 19
Dominion Oxygen Co., Ltd. .. ..
Donnacona Paper Co., Ltd., The .. 24
Don Valley Paper Co., Ltd. The 24
Downingtown Mfg. Co. 25
Dryden Paper Co., Ltd. 24
Dunlop Tire & Rubber 26
Dunham, C. A. Co. 18

E

Elixman Paper Core Co., Inc. 19
Elk Fire Brick Co. of Canada, Ltd. 30
English China Clays, Ltd. .. ..
Engineering & Machine Works of Canada, Ltd. .. ..

F

Ferguson, H. S. 22
Ford, J. & Co. .. ..
Foundation Co., Ltd. 22

G

Galt Knife Co., Ltd. 27
Garden City Paper Mills, Ltd. 74
Geigy Co., Inc. 72
Goldie & McCulloch Co., Ltd. .. ..
Goold Shapley & Muir Co., Ltd. ..
Gottesman, M. & Co 29
Graselli Chemical Co., Ltd., The ..
Graton & Knight Mfg. Co., Ltd. ..
Griswold & Co. 23
Gutta Percha & Rubber, Ltd. .. .. ..

H

Hamblet Machine Co. .. ..
Hamilton, Wm. Co. of Canada, Ltd.
Hamilton Gear & Machine Co. 87
Hans Renold of Canada, Ltd. .. ..
Hardy, George F. 22
Harland Engineering Co. of Canada, Limited .. ..
Hay Knife Co., Ltd., Peter .. .. ..
Hendrick Mfg. Co. .. ..
Hercules Powder Co. 16
Holliday, L. B. & Co., Ltd. 78
Huestis, A. M. 86
Hydraulic Machinery Co., Ltd. 3

I

Ideal Patents Corporation 20
Indusrial Engineering Co., Ltd. ..
International Business Machines Co., Limited. 23
International Pulp Stone Co., The 27
Interlake Tissue Mills Co., Ltd. .. 7

J

Jenkins Brothers, Ltd. 16
Jenssen Co., G. D. 23
Johnson Wire Works, Ltd., The .. 30
Jones & Glassco, Regd. 80

K

Kalbfleisch Corporation, The 86
Kander Paper Stock Co., Ltd., The 24
Kenwood Mills, Ltd. 13
Kimball, Herbert S. 22
Kingsbury Machine Works .. ..
Klipstein & Co., Ltd. A. .. ..

L

Lacey, James D. & Co. .. ..
Lagerloef Trading Co. 67
Langston, Samuel M. Co. 27
Laurentide Co., Ltd. 84
Lawrence Machine Co. .. ..
Lombard & Co. Inc. 27

M

Management Engineering & Development Co., The 23
Mead, Patton & Co., Ltd. .. ..
McArthur, Irwin, Ltd. 18
McAvity, T. & Co., Ltd. 32
McKinnon Steel Co., Ltd. 22
Mills Works & Machinery, Ltd. .. 80
Miramichi Quarry Co., Ltd., The .. 17
Montabone, J. A. F. .. ..
Montreal Locomotive Works, Ltd. ..
Morrison, J. L. Co., The .. ..

N

National Paper Stock Co., The 24
Niagara Wire Weaving Co., Ltd. The 74
Northern Crane Works, Ltd. .. .. ..
Northern Electric Co., Ltd. .. ..
Northern Foundry & Machine Co. ..
Norwood Engineering Co. of Canada Limited .. ..

O

Oliver Continuous Filter Co. .. .. ..
Ontario Forestry Branch 4
Ontario Wind Engine & Pump Co., Limited 26

P

Pacific Coast Pipe Co., Ltd
Patton, Mead & Co., Inc ..
Peacock Brothers, Ltd. .. ..
Penmans Limited 20
Pollack Bros. & Co., Ltd. .. ..
Port Arthur Shipbuilding Co., Ltd. 29
Porritts & Spencer Co., Ltd. .. .. ..
Price Bros. & Co., Ltd. 76
Price & Pierce, Ltd. 82
Provincial Paper Mills, Ltd. .. .. ..
Pusey & Jones Co., The 28
Pulp & Paper Mill Accessories, Ltd. 85
Pulp & Paper Trading Co., Ltd. ..

Q

Quarries, C. & M. Co. 72

R

Reed, Geo. W. & Co., Ltd. .. ..
Relph, Darwen & Pearce .. ..
Rolland Paper Co., Ltd. .. ..
Ross Engineering of Canada Ltd. .. 27
Russell Brothers 72

S

Sadler & Haworth .. ..
Sewall, Jas. W. 22
Sherbrooke Machinery Co. 9
Smallwood Stone Co., The 24
Smallwood Low Stone Co., Ltd. .. 27
Smith Howard Paper Mills, Ltd. .. 78
Spanish River Pulp & Paper Mills, Limited 86
Steel Trough & Machine Co., Ltd. .. 72
Sterling Electrical Co. 22
Stinson-Reeb Builders' Supply Co., Limited .. ..
Stebbins Engineering & Mfg. Co. .. 21
St. Maurice Paper Co., Ltd. .. ..
Sturtevant Co., of Canada, Ltd. 87
Swenson Evaporator Co. 87

T

Tallman, Brass & Metal, Ltd. 74
Taylor, J. A. .. ..
Taylor, H. S., Ltd. 23
Texas Gulf Sulphur Co. .. ..
Ticonderoga Machine Works 21
Tippett & Co., Ltd. 69
Tyler, W. S. Co., The 27
Trimbey Machine Works .. ..

U

Underfeed Stoker Co. of Can., Ltd. 2
Union Screen Plate Co. of Canada, Limited 87
Union Sulphur Co., The 30
United Wire Works, Ltd. 69

V

Vera Chemical Co. of Canada 87
Voorhees Rubber Mfg. Co. of Canada, Limited 23

W

Wallace, John H. W. & Co., Ltd. .. 23
Wardlaw, T. D. & Son 72
Walmsley, Charles & Co. Ltd. 14-15
Warren, Kenneth L. 22
Warwick Woollen Mills, Ltd. 28
Watford Engineering Works, Ltd. .. 6
Waterous Engine Works 90
Wayagamack Pulp and Paper Co., Limited 70-71
Weir, G. & J. èCanada), Ltd. .. .. ..
Westbye, P. P. .. ..
White, W. H. 22
Whyte, William 23
Wilson Patterson Co. .. ..
Wood Pulp Trading Co., Ltd. 68

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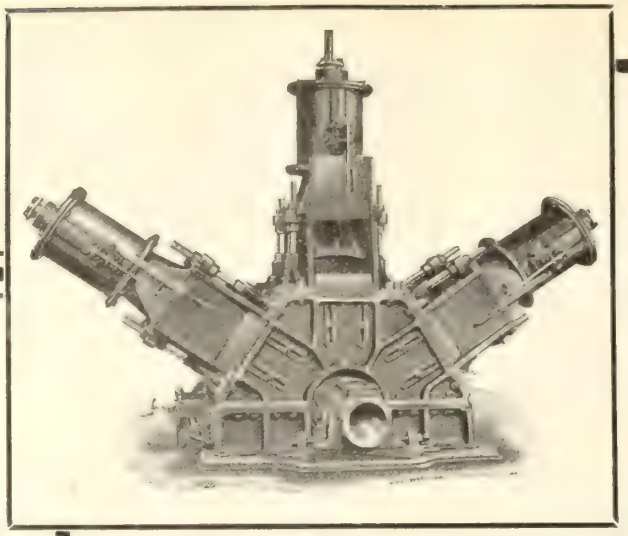
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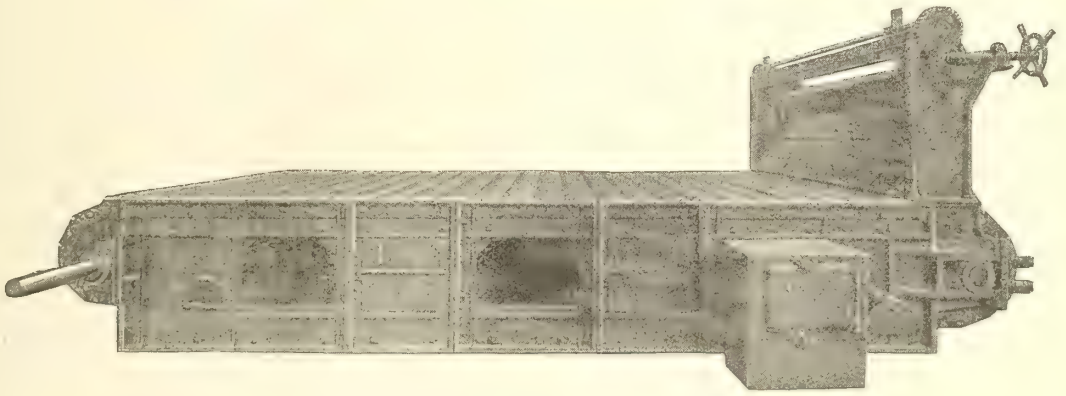
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We congratulate both you and ourselves on the results obtained through the use of Sea Ring packing.

Very truly yours,
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(Signed) F.P. Ashworth,
Purchasing Agent.

FPA:ML

A SET of Sea Rings installed on an electrically driven triplex pump at the Tidewater Paper Company's Plant lasted 5 years, 2 months, 10 days.

It cost $20 to pack the pump with ordinary packing lasting 5 months. For 5 years 12 packings would be required, total cost $240. The Sea Rings cost about $115—a net saving of $125.

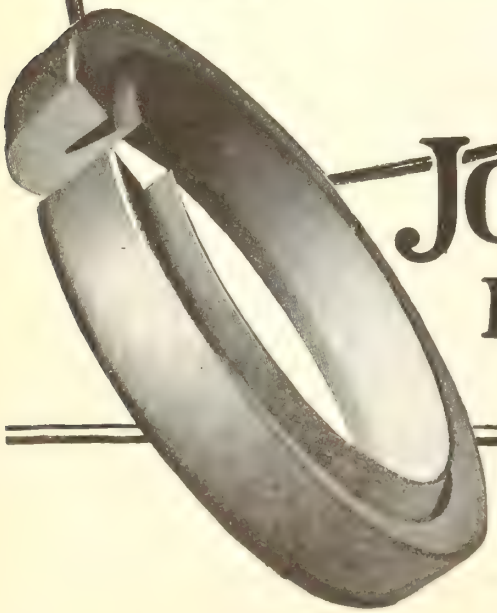
By actual *wattmeter* test, the pump ran with 23.3% less power when packed with Sea Rings—at 1c per K. W. H. the Sea Rings saved about $850 worth of power.

Saving in packing and power cost by Sea Rings totals $975.

The amount saved by Sea Rings varies according to conditions. But one thing is certain—Sea Rings average a far greater economy than any other rod and plunger packing.

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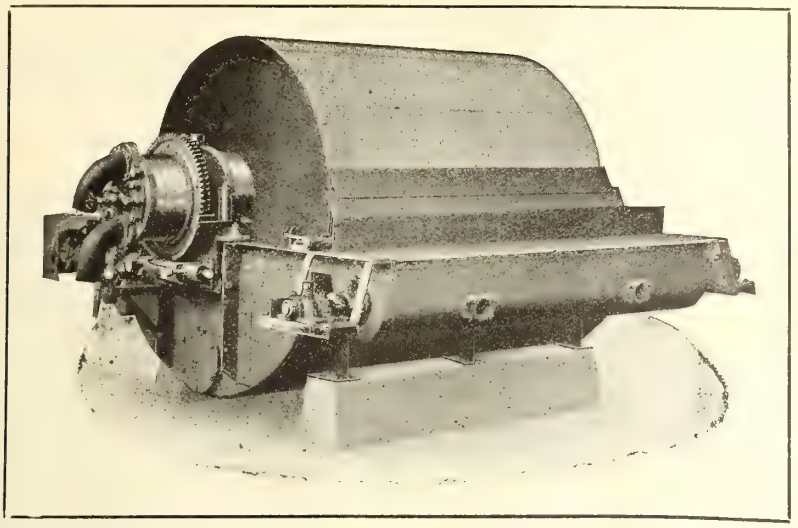
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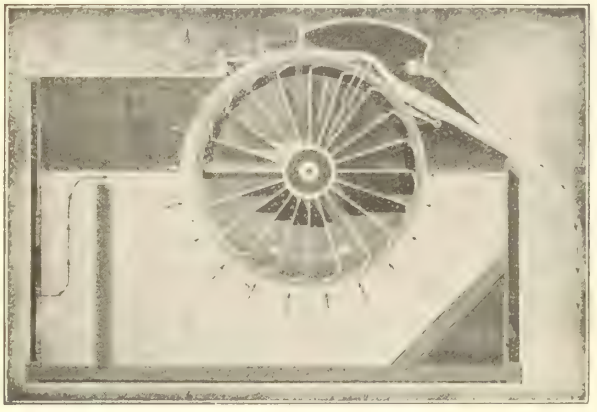


Diagram illustrating Cross Section of Pneumatic Save-All, showing direction of Air Pressures and Formation of Film of Fibres

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(2) He knows that in every industry in the world financial success rests, in a very great degree, upon preventing waste, in finding and stopping up, one by one, every possible source of loss.

(3) He knows that great progress has been made, in his own business, by instituting wise economies — real economies—in management, in production, in the marketing of his product.

(4) And yet he knows that until recently very little progress has been made in preventing the enormous but hidden losses through waste water that is rich in fibre.

(5) He knows all about the schemes that have been exploited and the costs incurred in trying to save this waste, and that as a rule this waste still goes on because the measures tried have not proved capable of preventing it.

(6) Nevertheless, a way exists to save waste fibre successfully. The engraving gives an idea of this way, and we request only the opportunity to tell every mill owner and superintendent all about it.

(7) The reason of our success in this line is that we have found the one natural method of catching and holding the fibre as it flows away in the white water, and have applied this method in our Pneumatic Save-All.

(8) In the engraving our Pneumatic Save-All is shown in cross section. Inside the cylinder mould we produce a very slight vacuum, by a blower. The waste water is lightly sucked through the screen and drains away while the fibers are trapped and held upon the outside. They cannot rub off; they cannot slip through; for they are pressed flat upon the screen by air pressure. (See the inwardly pointing arrow heads.) At the top of the circle each section of the cylinder in turn comes under the direct action of the pressure side of the blower, and the film of pulp is lifted off (see the outwardly pointing arrows) onto a deflector. One Save-All and blower take only 5 H.P.; and the same blower, with very little extra power, will serve two Save-Alls.

We have installed hundreds of them in mills where old methods had proved useless, and where we have had to prove both the existence of heavy losses and the power of our Save-All to prevent them.

SHERBROOKE MACHINERY CO., Limited

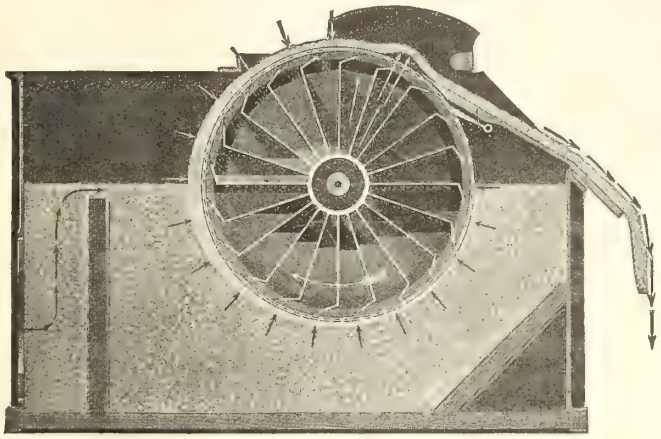
SHERBROOKE - Quebec

THE PNEUMATIC PROCESS OF THICKENING PULP

SIMPLE, DIRECT, ECONOMICAL AND AUTOMATIC

THIS process is now in general use. It is installed in many prominent mills as their standard method, and has been in service over a period of several years, so that it is thoroughly established.

With our Pneumatic Thickener. the stock from screens is thickened directly to the density desired for the beaters, and is delivered to the beaters without going through the usual process of forming "laps" on a wet machine. The wet machine is used only for thickening stock to store or ship.



We particularly advise this method for thickening sulphite and soda pulp, as it delivers this class of stock in a perfectly smooth mass of uniform density, and our customers say that they have never before accomplished this result so successfully, even with wet machines.

The pneumatic method, being simple, direct, and automatic, is operated at far lower cost than is possible with wet machines.

In the special pneumatic pulp-thickening machine which we build the stock is thickened on a revolving cylinder mold by suction, and is removed by air-pressure. This action is rendered so uniform that all irregular thickening of stock is prevented. For example: if you desire to thicken to 3 per cent, we guarantee our Pneumatic Thickener to work at that point within ¼ of 1 per cent when properly installed.

Usually the Pneumatic Thickener is placed at an elevation sufficient to flow the filtered water back to the screens under the desired head, although it may be located wherever desired. It occupies a floor-space of approximately 6 x 12 feet.

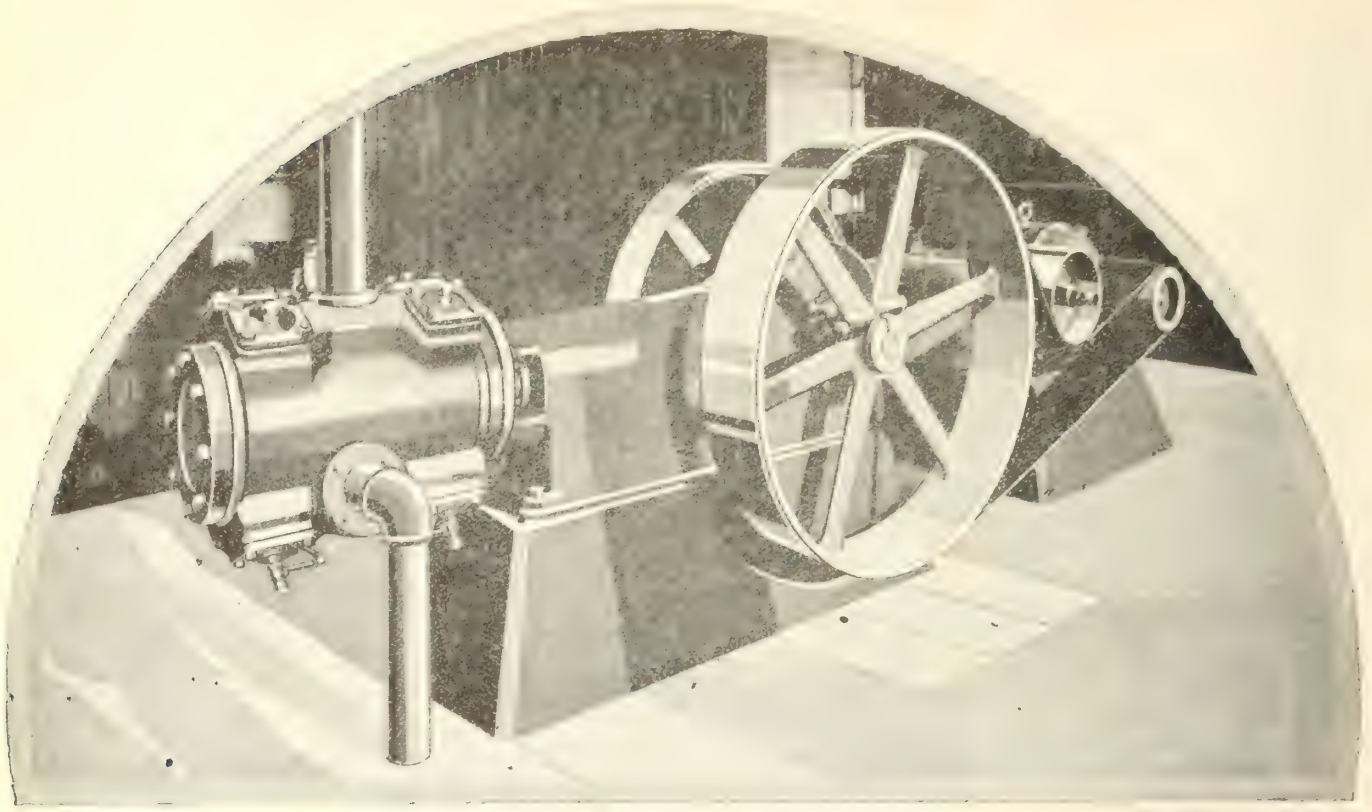
We believe this method to be the cheapest to operate and maintain that is now in use.

The entire process is automatic and continuous. It dispenses with the costs of power and labor required in wet machine operation, and its sole cost is the slight expense of power required by the blower and to revolve the cylinder mold. Moreover, it occasions less waste of stock than the wet machine or the decker.

Investigation Warranted

SHERBROOKE MACHINERY CO., LIMITED

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Where Can We Use More Air

Every day in practically every industry men are asking this question because they know that the use of more air means less manual labor and reduced production cost.

Air hoists and air operated tools such as riveters, chippers, grinders, etc., have ideally demonstrated their superiority, power and flexibility.

The advantage of air over steam for operating feed cylinders, kickers, and other reciprocating mechanism is well recognized.

Air operated devices have materially increased the capacity of many machines and special appliances.

Advantages of cleaning with the air jet and painting with the paint spray were instantly recognized and adopted.

The agitation and transportation of liquids with compressed air is being used wherever possible.

A jet of air protects dams against ice pressure; breaks up caked chips and blows the paper from one stack of rolls to another.

So the "Story of Airs and Its Uses" grows ever bigger, for each day men see the advantages of its application and every day the compressor which supplies the air assumes greater importance.

Men who know specify "Ingersoll-Rand" and where only a limited supply is needed they choose the Class "ER" belt-driven compressor shown above. Its simplicity appeals to the operating engineers, and its efficient performance is revealed in each month's power bill.

Consult our engineers for suggestions about the use of air and let us send you descriptive bulletins. Bulletin K-311 describes the "ER" compressor in detail. If you are interested in steam drive request Bulletin K-312 describing Class "FR" machines.

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WASHED
WITHOUT
SHUTTING DOWN
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The Patented "Ayers" FELT WASHER attains this ideal for which paper makers have long been striving. By the means of this device, the work of cleaning and washing the Felts is done without stoppage of the machinery and, in the case of news print or similar paper, without breaking or crushing the sheet.

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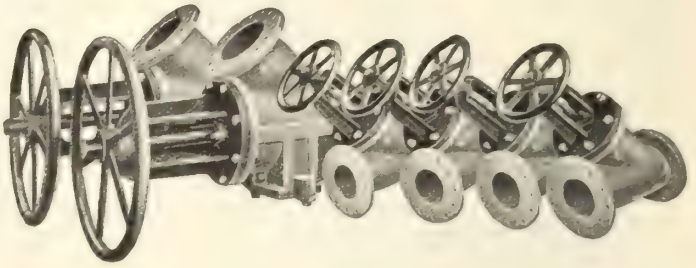
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A special Felt has been designed for use in conjunction with this Felt Washer wherever it is in operation.

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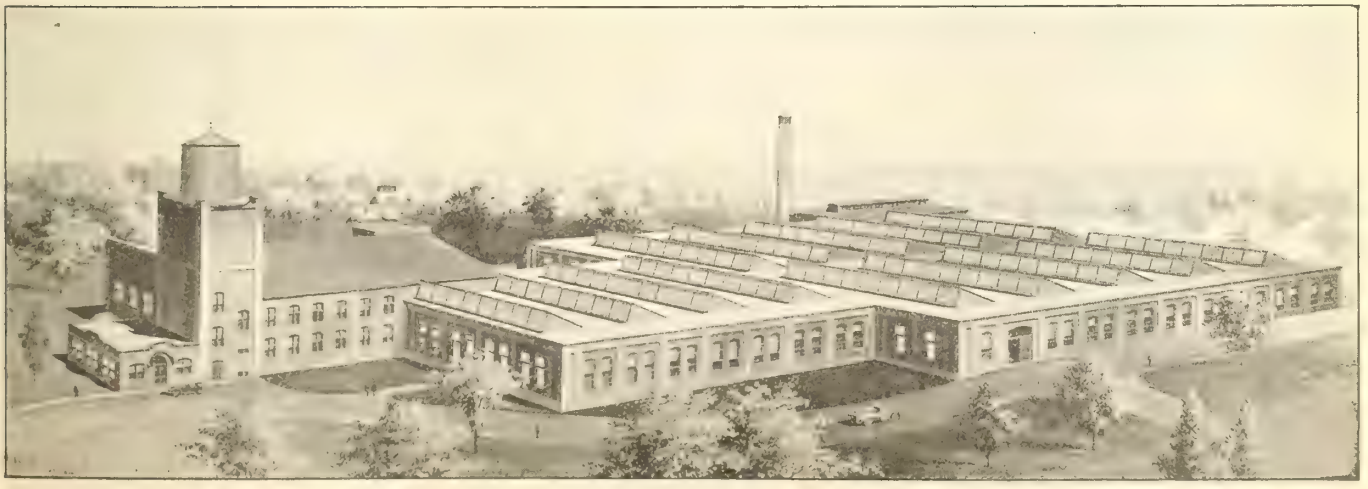
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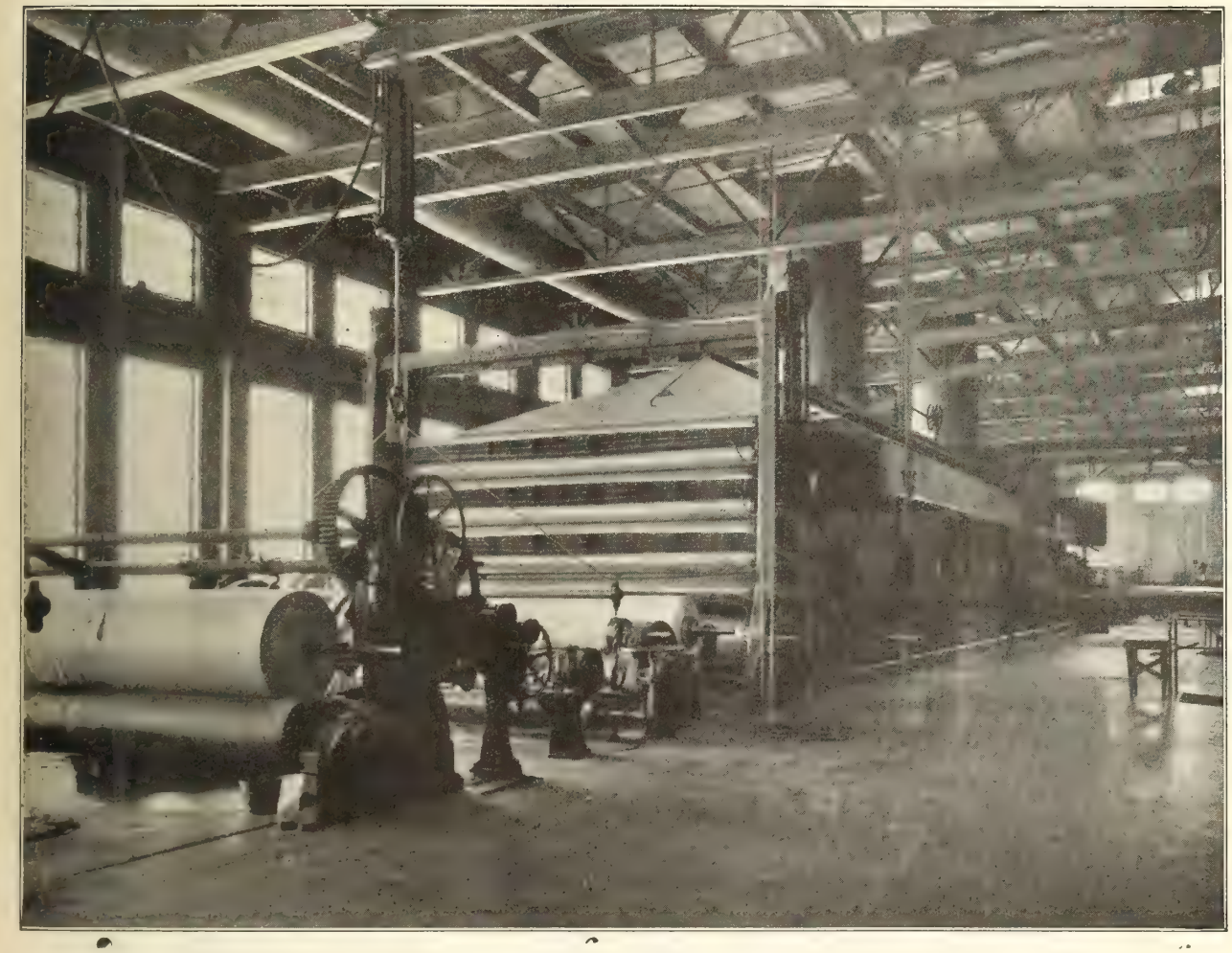
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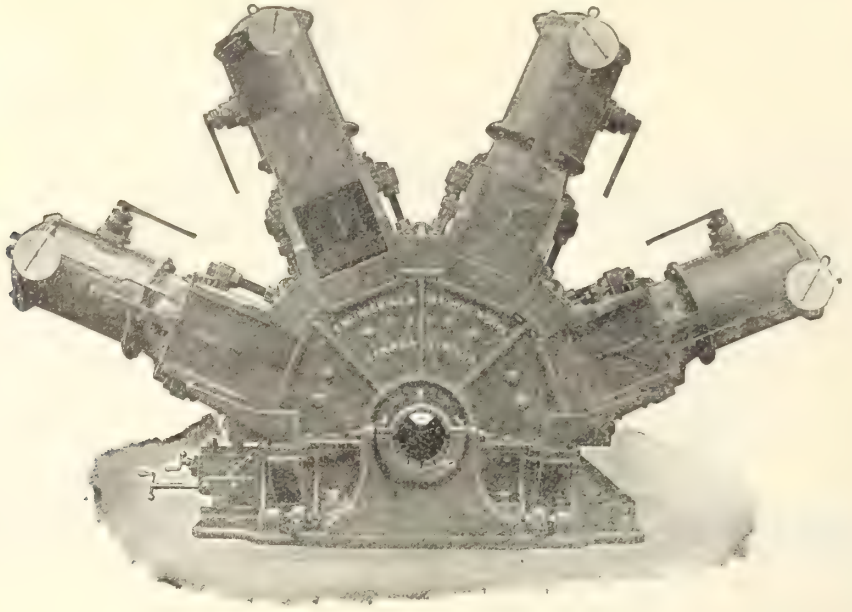
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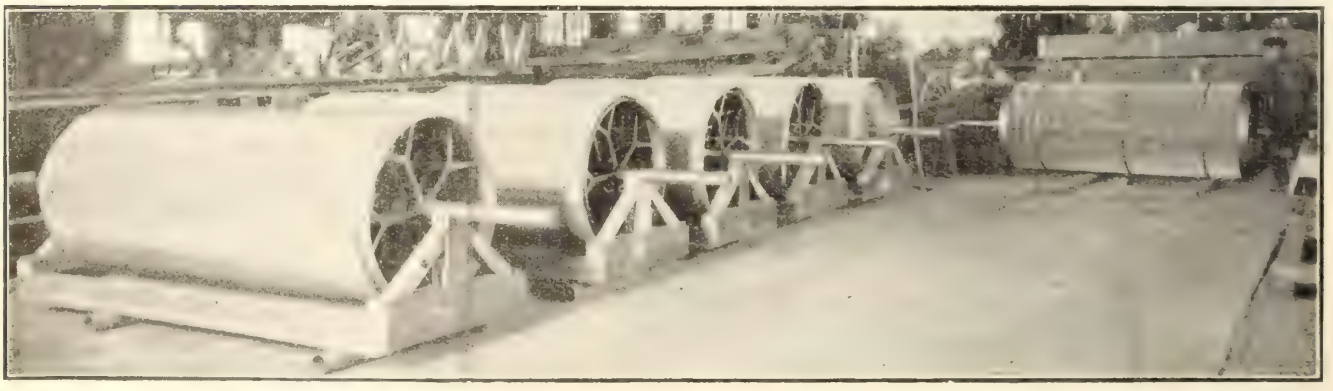
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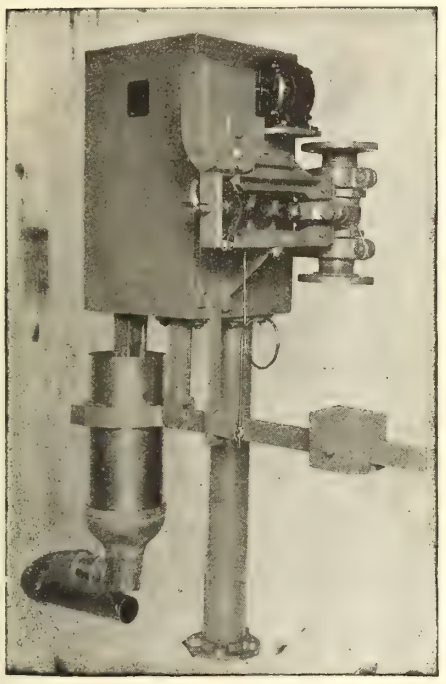
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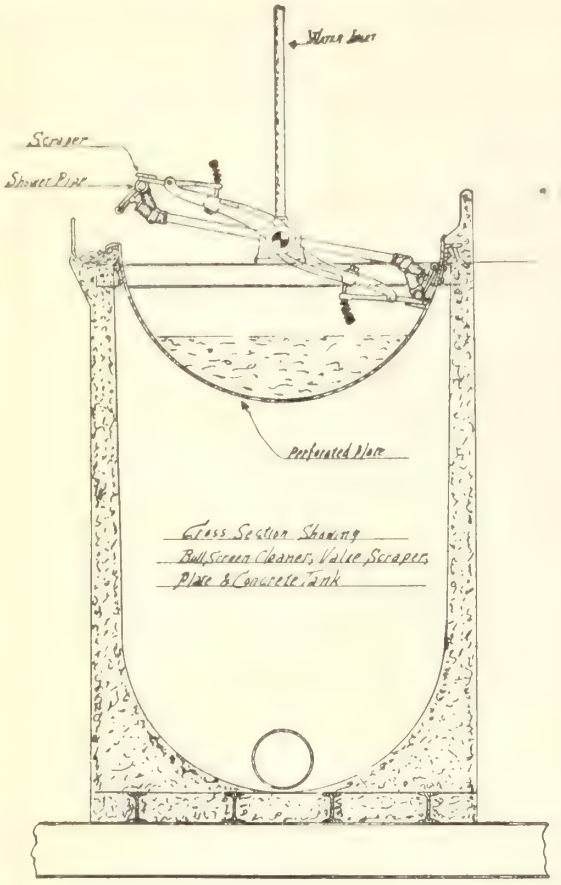
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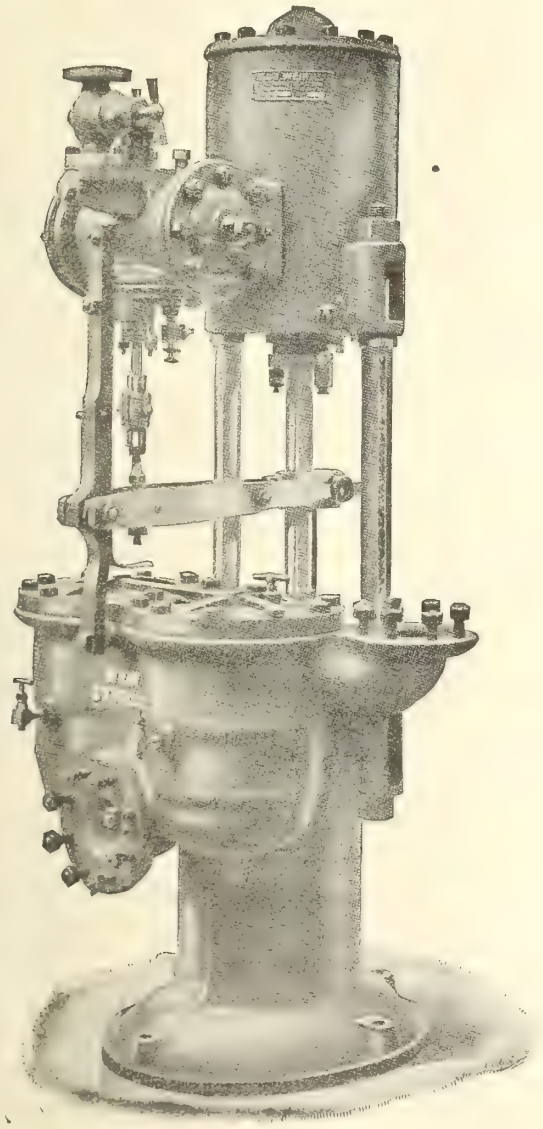
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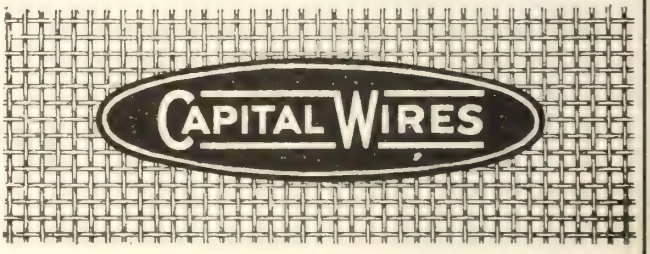
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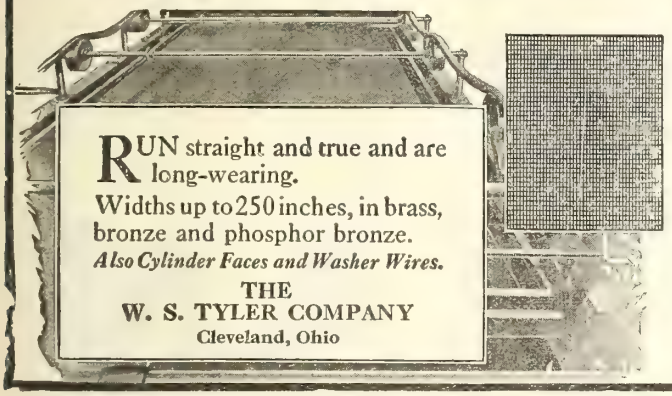
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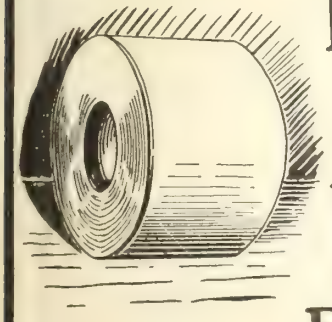
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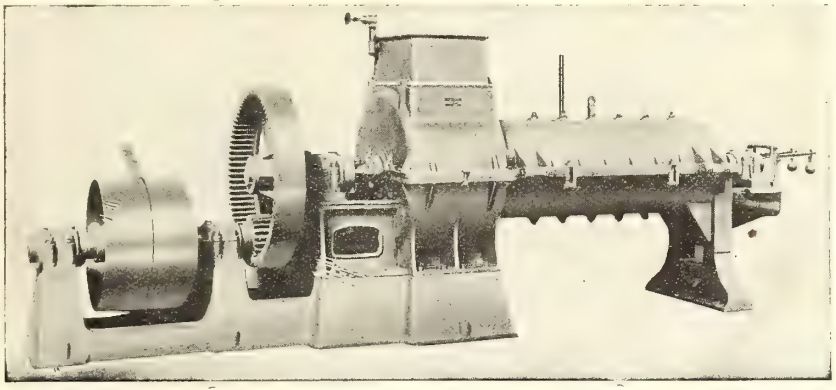
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TABLE OF CONTENTS

Editorial:
Association service to the rescue 665
Short memories 665

Special Articles:
Heat recovery from machine room vapor 667
No cause for alarm in pulpwood embargo 671
Paper profits 673
How to establish an export department 675

Miscellaneous Information:
What do we do when we burn our trees? 666
Cost of de-inked newspapers 674
Book on burning oil 676
The wages of carelessness 681

News of the Industry:
The paper industry in the Lake St. John district 670
The exodus 670
Chemical Exposition exhibitors meet 672
Western Canada Pulp reorganization 672
Must come to sustained yield 674
You can't keep them down 675
Paper making industry in Japan 676
Pulp and paper news 677
New Brunswick News 678
United States Notes 682
Sold timber limits 682

Institute Items:
Flow of stock in pipes 676
A frank comparison 676
One on the worm 676

The Woodlands Section:
Perpetuating a pulpwood supply 679
Abstracts of forestry articles 680
Why not use our own timber 681
Pulp mill growth affects lumber 686
Chief forester complains of settlers' apathy 686

The Markets:
Canadian Trade conditions 683
New York markets 684

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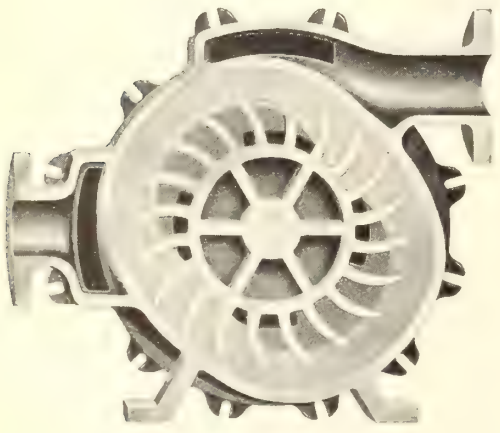
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Heat Recovery From Machine Room Vapor[1]

By J. O. ROSS, President Ross Engineering of Canada, Limited

I am glad that this paper is to cover one subject only. The Briner economizer has been discussed to some extent in the past, but usually as a side issue in the ventilation of the machine room. In this paper we will discuss this one subject and make the others incidental.

We must first have a clear understanding of the reason for and principle of ventilating the machine room. The machine room should really be considered as part of the paper making machine. It is the enclosing shell around the moving parts of the machine. The design and construction of it should really be carried out in the same way that any other part of a machine would be considered. The ventilation of the room is really part of the process of making paper. It should be done properly and in an ample manner in order that it may not impede the operation of producing paper and yet it should be done as economically as possible in order that no excessive cost will be added to the cost of production.

When a sheet of paper is formed it is very wet and it must have this moisture removed. Part of this water is removed at the wet end of the machine which is really a part of the drying equipment. This is rather a new way of looking at it but is becoming well recognized and much study and effort are being made to have the wet end remove as much water as possible. However much may be accomplished in this end there is a large volume of water which must be removed on the dryers. This amount of water may be equal to nearly three times the weight of paper produced as on some news machines, or may be one and one-half times as much, as is usual on boxboard, or about as much water as pulp on some pulp machines.

This water is evaporated from the sheet when passing over the steam heated dryers and as it is water vapor it must be removed from the machine room to avoid condensing on the ceiling. In order to carry away this vapor, a certain amount of air must be allowed to pass out with it. This is absolutely essential and basic if the paper is to be dried. The amount of air that must pass through the machine room is dependent on three things.

The first is the amount of water that is to be carried out. This includes the water evaporated from the sheet, plus the water dried out of the broke, plus the water rising from the wet end of the machine. These quantities must be ascertained as closely as possible as we must first know how many pounds of water vapor we have to remove.

The next factor is the temperature at which the mixture of air and vapor will be carried out and the third factor is the percentage of saturation of the mixed vapor and air. These two factors when known will give us the number of pounds of vapor contained in each cubic foot of air. Then it is a simple matter to determine the cubic feet of air per minute that will have to pass through the machine room. The temperature of the air and percentage of moisture contained can be measured on an existing job or must be based on experience. Much depends on the question as to whether there is a hood over the machine, how cold the roof is and how much margin should be provided for avoiding danger of drip.

Assuming, however, that we have arrived at the total volume of air that must be allowed to pass through the machine room. The amount is surprisingly large, but we will touch on that later.

Now bear in mind that every particle of that air must be heated from the temperature outdoors to the temperature in the ventilators. It doesn't matter where the air comes from to the machine room, it is evident it finally must come from outdoors and is heated somewhere in the mill. It may come from a finishing room in which case you are paying for heating it in that room. It may be heated by a fan heater, or by steam pipes on the roof or by the dryers themselves. It doesn't matter where you do it, you are heating it and you are paying for this heat unless it comes from some source which would otherwise be wasted.

We are not discussing in this paper the best method of introducing the air into the room or the various ways used to make this air perform other work besides carrying off the moisture in order to make it partly pay for this heat it has taken. We are only concerned with the fact that a large volume of air must be introduced into the machine room and that it must be heated.

Now let us see how serious a problem this is and whether it is going to take an amount of heat that will be noticed in production costs. Let us not theorize but take some real mill in actual operation. Take a Canadian newsprint mill making on one machine 75 tons of newsprint per day. This mill has two machines in a room but let us take one machine for our figures. The paper entered the dryer section 70 per cent wet and left the dryer section with a moisture content of 5 per cent. This figured 259 pounds water per minute evaporated. The air passing out of the ventilators varied at different points from 112 deg. to 127 deg. and the wet bulb temperature from 96 deg. to 120 deg. This averaged about 20 grains of moisture per cubic foot of air so that about 91,000 cubic feet of air per minute was passing through the room for each machine. When the test was made it was just zero outdoors and the average temperature of the air passing out of the stacks was 120 deg. Therefore this mill was heating for each machine 91,000 cubic feet of air per minute from 0 deg. to 120 deg. and using approximately 183,000 B. t. u. per minute equalling about 183 lbs. of steam per minute or 10,980 lbs. of steam per hour and it was live steam. At a figure of even 50c. per thousand pounds of steam it was costing nearly $5.50 per hour to heat the air. This machine was turning out a little over three tons of paper per

[1] Paper read at Summer Meeting of the Technical Section, Gardenvale, Que., June 21, 1923.

hour so that the cost of heating the air in the machine room was $1.80 per ton of paper. Rather a nice profit in itself.

It is quite evident from this that the amount of steam required for ventilating a machine room is a serious item and is a charge upon the production that it well worth considering. It is quite a percentage of the amount of steam required to dry the paper. For instance on the machine just referred to, the amount of steam required on the paper machine amounted to 364 pounds of steam per minute or 21,840 pounds of steam per hour. The amount required for ventilation was therefore almost exactly 50 per cent. of the steam used on the machine, yet this ventilation system was efficient and many mills are running with far less efficient ventilation systems than this.

As it was stated previously, this heat for ventilation is a direct charge and must be supplied somehow and somewhere. It may be furnished by exhaust steam, which might on the face of it appear to not be a serious charge. It should first be determined, however, that this exhaust steam cannot be used elsewhere and that in modern power plants, especially with bleeder turbines, this exhaust steam is a heavy charge on the power plant. In many paper mills, however, this steam is direct live steam and it is upon that basis that the problem becomes very serious. These figures were given for zero weather but in Canada we get many days from 20 deg. below zero to 40 deg. below zero. When the weather is 20 deg. below zero this steam consumption goes up 16-2/3 per cent. and in 40 deg. below zero weather nearly a third more steam is used than in zero weather. It is just during this extreme weather that the heaviest load comes upon the power plant in any event and to feel that when the boiler plant is at its peak that the ventilating requirements will call for a third more steam, presents a problem that cannot well be figured in dollars and cents. The chief engineer of one big news mill told the writer that any saving in steam during the cold weather period can not be figured on a cold dollars and cents basis because these ventilation steam requirements were the very things that forced their boiler plant to the peak and that was when they had any troubles on the equipment.

Assuming, therefore, as I think we all will, that this heat leaving the dryers must come from somewhere in the mill, we have already stated that this must be steam or it must be a source of waste heat. In some mills there will be buildings where there is an excess of heat which may pass from that room into the machine room and perhaps can be considered as not costing anything. This is sometimes true in engine rooms. In most mills, however, there is no source of this type of waste heat that amounts to very much. The biggest source of waste heat is quite evidently the vapor rising from the machine room roof. It should be remembered that the steam used on the paper machine has been very largely expended in turning the water into vapor. This vapor at a high temperature passes to the atmosphere. If this vapor could be condensed back into water we would recover the latent heat and it is this purpose that the Briner economizer serves.

The Briner economizer is a device consisting of a series of chambers or channels separated by thin metal sheets. The hot vapor from the machine passes through one series of these channels and the cold air supply for the machine room is drawn through the alternating channels. This cold air absorbs the heat transmitted through the metal plates and this heat warms this air up so that it saves the steam required for heating it. If the moist air leaving the machine room had been dry air, it will be quite evident that we would get a proportional rise in temperature of the cold air, that is, if we lowered the temperature of the exhaust air 20 deg., we would increase the temperature of the incoming air 20 deg. This ratio, however, is entirely different on account of the exhaust air being moist. We secure practically 1,000 B. t. u.'s when we condense a pound of the vapor in the exhaust air and it has been found that by cooling the exhaust air only 25 deg., that we will get an increase in temperature of 85 deg. in the cold air entering. This is due to the condensation of the vapor. This condensed vapor runs down the economizer channels and is connected by drip gutters on the bottom which carry it to a main drain pipe. The first one of these installations was put in approximately four years ago and it is interesting to note that this first installation was in a Canadian mill. There are now in operation in Canada, eight of these Briner economizers and in the United States seven. There are quite a number of them being installed this year for use next winter both in Canada and the United States. They have not been in use a sufficient length of time so that we could get extensive practical figures on what they are actually doing, but we have data that are very significant. The rise in temperature secured varies depending considerably on the temperature and humidity of the vapor. I am giving herewith some of the figures as to the rise in temperature secured on different economizers this past winter and you will note what a large percentage of the heating of this air is done by the economizer, which utilizes nothing but waste heat.

Air entering 6° below zero. Air leaving economizer 82°. Vapor entering economizers or leaving room 108°.

Air entering 14° below zero. Leaving economizer 63°.

Air entering 2° above zero. Air leaving economizer 69°.

Air entering 18° above zero. Leaving economizer 90°.

Air entering 52°. Leaving economizer 100°.

Air entering 12°. Leaving economizer 85°.

Air entering 16°. Leaving economizer 94°.

These varying results are obtained on different mills, but all bear a relation to the vapor and outside temperature on each installation.

Now let us see what this heat saved would mean on the machine in question. Considering their conditions, it was determined that an economizer installation would heat the incoming air on this 75 ton machine from zero to 85°; from 20° above zero to 88°. Now our total rise in temperature from the outside entering air to the air leaving the hood is from zero to 120°. The economizer would heat it from zero to 85° and steam would be required somewhere in the mill to heat it from 85° to 120°. That is, 85° of this rise would be accomplished by the economizer and 35° of this rise by steam. This would mean one would need in zero weather 3,302 lbs. of steam per hour instead of 10,980 lbs. or a saving of 7,678 lbs. of steam per hour on one machine. At 50c per thousand pounds for steam, this is a saving of $3.84 per hour or $92.16 per day during the zero weather.

This mill in question figured that they had 150 days which would average 20°; this figured out a saving of $74.64 per day for 150 days or a total of $11,196. Then they figured that they would have another 100 days when it would average 40° and this would represent a saving of 4,575 lbs. of steam per hour and at 50c. is a saving of $2.28 per hour or $54.72 per day and for this period an additional saving of $5,472, or a total saving for the year of $16,668 worth of steam, without considering the other 50 operating days.

As stated before this showing in dollars and cents does not properly show what happens in the extreme winter conditions. The economizer really acts as a balance valve on the weather. The saving due to the use of a Briner economizer increases very rapidly as the outside temperature drops due to the greater difference of the air temperature and the vapor temperature. This can easily be seen when it is stated that on one installation the temperature of the air leaving the economizer at 20° above zero was 90°, at zero it was 88°, at 6° below zero it was 82°, at 20° below zero it was 79°, at 40° below zero it was 75°. In other words, the steam requirement in that mill for ventilating the machine room was only a few percent more when it was 40° outdoors than when it was 20° above outdoors. The economizer installation in the news print mill quoted above, will show a return on the investment of about 70 per cent.

It should be clearly borne in mind that a Briner economizer is exactly the same in its effect as a heater. When putting in a fan system for discharging warm air into a machine room, a steam coil heater is used. Therefore the cost of the fans and distributing ducts should not properly be charged against the economizer installation but should be an entirely separate investment. This makes it possible for mills which now have ventilating equipment to put in economizers in conjunction with this ventilating equipment.

The arrangements of these economizers have to be very carefully considered and in many old mills it will not be found practical to install them without excessive changes in the ventilating equipment or the buildings. On a new mill, however, arrangements can be made when the mill is being built to use economizers and I feel that any new machine room being built in Canada should be so arranged as to ventilating equipment that an economizer could be added even if it should not appear that it may be installed in the beginning.

Just one further explanation of the installation of these economizers. It will be seen that the heat is derived from the vapor passing off the machine. Now if the machine should be shut down a comparatively small amount of vapor will pass out, which would not give as high a temperature of air leaving the economizer as it would with the machine in operation. For this reason a bank of steam coil heaters is installed between the economizer and the fan and in order to make this require as little attention as possible and to insure that this steam is not left on when it is not necessary, a thermostat is used on the steam valves of these coils. When the temperature of the air entering the machine room drops below the required temperature due to shutting down the machine or due to an extreme change in temperature, the thermostat automatically turns on the steam and maintains the desired temperature until the economizer is again heating the air to the desired temperature, in which case the thermostat shuts the valves automatically. Provision is made for recirculating the air from the machine room through these coils on Sundays and during shutdown periods. This prevents heating cold fresh air during these periods when ventilation is not required.

Discussion

In response to questions which have been asked, the following might be added.

1. The question of using the air from which the moisture has been extracted. It is very doubtful if this air could be used on any ventilating problem around the mill. It will be understood that this air is not only saturated but usually super-saturated, that is, it carries free moisture along with it. This air has only been cooled down to a temperature of from 80° to 90°, therefore the re-use of this air would mean using air totally saturated at a temperature of 80° to 90°, which would mean that this air would have to be heated very considerably hotter than outside air in order to get the same capacity for absorbing moisture. It is perfectly practical to figure out that there would be a saving in steam if that air was used in some other part of the mill instead of fresh air, but it would mean carrying the air out of the building and maintaining the building at such a high temperature that it would be impossible to have workmen remain in it. It would not be practical to use it in the machine room because it is all practically the same temperature as the air which has been heated and contains from five to fifteen times as much moisture.

2. The question as to the use of the water condensed. This water is at a temperature from 75° to 85°. Some questions were asked as to the use of this for boiler feed make-up but we would hesitate to recommend that in view of the possible injurious effect. There is no reason why it could not be used for shower water or for a box board mill in the beaters. It should be remembered that this amount of water is not a very large item as it does not require a great deal of vapor condensed to give a large amount of heat.

3. As to the size of this equipment, a Standard Briner Economizer is about 8½′ in height over all and about 8½′ in length. The width of the equipment varies with the size of the paper machine and governs the amount of vapor being handled. It may be cut up into several units or put in this one unit. The total width if made in one unit for a 75 ton machine would be about 19′. It is not usual, however, to make them in one unit and the usual size of the units is about 10′ wide. The most suitable metal for the plates is pure wrought iron.

4. The question was brought up as to the variation in the volume of air for Summer and Winter conditions. This is something that has not been given very much consideration in the past but is certainly something that will have to be considered very carefully in the future if we are going to have economical conditions. It will have been seen from this paper that the amount of air passed through the machine room is determined by taking the total grains of moisture carried out of the roof by the vapor and deducting from that the total grains of moisture coming into the room with the incoming air. In Winter when it is about zero there is practically no moisture in the incoming air but in Summer it is common to get as high as six grains of moisture in each cubic foot of air. Therefore

assuming that the vapor passing out of the roof carries 20 grains per c.f. it will be seen that the net amount carried off from the machine in Winter would be approximately 20 grains per c.f. but in Summer it would be about only 14 grains per c.f. Therefore it would be necessary to pass through the room about one-third more air in summer than in winter. The common practice has been to run the exhaust fans fast enough to take out the amount of air required in the summer and then pull that much excess air in the Winter just the same, which is not economical. We have, and are still working on the problem of an automatic control to vary the amount of exhaust air by the requirements but this matter has to be handled rather carefully due to a realization of the fact that the machine tender's principal duty is to manufacture paper and not to operate a ventilating system and whatever is done must be done without interfering with or distracting the attention of the machine tenders.

THE PAPER INDUSTRY IN THE LAKE ST. JOHN DISTRICT

The following impressions of a Montreal visitor to the Lake St. John, P. Q., district will give an idea of the work now being carried out by the Quebec Development Company, in conjunction with Price Brothers. When this work is completed we may expect a considerable expansion in the pulp and paper industry there, and also a development in mining and other branches. The visit was made last week to Chicoutimi, where Price Bros. are extending their mill, to Kenogami and to Grand Discharge, where very extensive operations are being carried out.

At Chicoutimi a dam is being constructed to develop a power of about 10,000 h. p., which will be transmitted over lines, now completed, to Grand Discharge in order to provide the power for the great work at that point. The Chicoutimi development will flood a large area of land and will wipe out the village of St. Cyriac. At Kenogami Price Bros. are installing two additional Walmsley newsprint machines. On the trip from Kenogami to Grand Discharge we found evidence of an awakening in the way of commercial activity. Many new houses are being constructed, and some enterprising people are putting up stores in anticipation of trade in general commodities.

Owing to the lack of railway facilities, goods and materials for the work at Grand Discharge have to be hauled there from the rail-head. The fact that a line is to be completed to Grand Discharge has naturally increased the value of land in that district. It looks indeed as if the Lake St. John region will be greatly developed by reason of the immense amount of electrical power which will be ultimately available.

The Camp at Grand Discharge is admirably situated on the side of the River Saguenay. Many houses have been erected, together with a club house so that the 2,000 men are being well looked after. Lake St. John feeds the River, and has three outlets. The foundations for the main dam are being built, and later the dam will be extended right across the river. This will back up the water 18 to 20 feet, and give a sufficient head of water to develop about 600,000 horse power. The work will be of immense benefit to the Province of Quebec, and we may, with the cheap power available, look for the establishment of many industries in that district.

THE EXODUS

(Contributed)

The pulp and paper mills have been no exception in the deserting of skilled and unskilled employees to industries to the South of us. The high wages prevailing in the American cities is the magnet which is drawing many a promising young man out of Canada. One large pulp and paper mill, to my knowledge, lost five skilled men in as many days, the reason given for leaving being their desire to go the United States for the higher wages. (The correctness of this is doubtful.)

The pulp and paper industry has felt this drain much more keenly than the average manufacturing plant. Situated as most of the paper mills are in small towns and in some cases mere villages, the management is often hard pressed to keep their young men from drifting to the city. Some companies recognizing a lack of recreation facilities have endeavored to make life more enjoyable around their plant by means of social service work. Other companies have simply met the higher wage problem with individual increases. The latter course, however, is retaining employees.

One mill hand was heard to remark, "Give me good wages and I will make my own social life." In that remark the whole question of social service lies. Is it worth while? Does it accomplish its object? Certainly the opinion of employment managers differ on these points. The writer knows of two large mills situated in the same town, one does everything possible to make life pleasant around the plant, the other mill takes no interest whatever in their employees. What are the results? At a time like this when there is a decided drift of Canadians out of this country, one would expect to find the employers of the last firm the most discontented of the two, but such is not the case, it is the employees of the first firm who have shown a tendency to look for green fields elsewhere. The reason is not hard to seek, the second firm pays better wages than the first firm, and hence there is not the same inclination to leave, which goes to show that employment managers must not expect to keep their firms' employees content by means of social service work alone. The workman's natural tendency is to strike a balance between the advantages the manager offers in salary and promotion, and those held out by other employers. No appeals less tangible are allowed to stand in the way.

There are many places, of course, where because of the location the factory force must depend upon itself for diversions and no doubt annual picnics and other occasional outings are not only recreative for the workers but help also to foster an esprit de corps. The effort, however, which is so often made to make the factory a social center is certainly debatable. The average man likes to take his recreation away from the factory or office and in this respect all workers are very much alike.

The employment manager in times such as these, will find that the broad basis of appeal is pay scientifically adjusted to individual effort, supplemented with a proper proportion of welfare work; this latter must be in addition to, and not made a substitute for good wages.

Forget not to show kindness unto boys, for thereby some have entertained great men unawares.

"PAPER PROFITS"

BY THOS. J. BURKE, C. A.

Secretary-Treasurer—Cost Association of the Paper Industry and

Assistant Secretary—American Paper & Pulp Association

The term "Paper Profits" has a very significant meaning in the financial world. Such profits, of course, represent profits made according to the books, but not yet converted into cash. For paper manufacturers perhaps the term "paper profits" has a different meaning, namely, profits made by making paper. It would seem that many paper manufacturers do not appreciate the fact that they are really in business to make "profits" rather than "paper," the making of paper being merely the avenue chosen by them for the making of profits.

The time has come when owing to world-wide competition it has become necessary to manufacture on an increasingly larger scale, and thus it has become more difficult for manufacturers to keep in direct contact with the different phases of their manufacturing operations. They have had to delegate different parts of the work to assistants and to rely on these assistants to keep them informed as to what is going on in their departments. Since each department must influence to some extent the work of other departments, it can easily be seen there must be close co-operation between all of them if the chief executive is to receive correct information from them all, and thus be in a position to judge correctly regarding the efficiency of his mill. The question is then, how can such close co-operation best be accomplished? Of course, the information the executive wants more than anything else concerns the "cost" of manufacturing his different lines, and the expense of selling and distributing them, because then he is in a position to judge whether he can compete successfully in the various available markets.

As a rule, executives are not accountants, and often have little patience with the stereotyped accountant's reports. They want the information, but they want it supplied in such a way that it can be easily assimilated. Cost accountants in the industry are gradually coming to realize that this is a fact, and that it is partly their own fault that the importance of the work they are doing has not been generally recognized by their employers. On the other hand, these employers, many of them should be willing to admit that they themselves have not fully recognized the fact that they must have absolutely dependable cost figures if they are to carry on business successfully. They have all realized the necessity of getting the services of the best available salesmen, knowing that if their products were not pushed and brought to the attention of buyers in a proper manner, their receipts would fall off, and consequently, their profits. The just as important point that they must know just how much profit these receipts include, does not seem to have made such an impression on them. Many large mills have adequate cost departments, but the men in charge of these departments seldom receive the same co-operation from the executive as that given the Sales Manager. Just as long as this condition exists, the pulp and paper industry will have periods of big losses, because many mills will continue to rely on their sales departments to carry them over periods of depression as best they may, instead of adopting the policy, during such periods, of at least refusing to sell below cost by getting absolutely dependable cost figures from their cost departments and instructing their sales managers to sell paper at or above these figures, or not at all. The trouble is that when business improves and paper can be sold at a fair price, many executives do not think it necessary to worry about their cost figures. The point that if the cost department is to serve them satisfactorily it must have reliable figures during good as well as bad times, is overlooked. It is just as important to have reliable cost figures in good times as well as bad times, especially when all the items entering into the cost of making paper are rising faster than selling prices. It is really difficult to understand how some big mills are conducting their business with the unsatisfactory cost systems which they are now using.

The fact that the pulp and paper industry is one in which the amount of capital invested is very large in comparison with the annual turnover is very important, and should never be overlooked. This fact makes it imperative that if a fair margin of profit is to be earned on this capital, *all* sales must include their share of profit. Since it is impossible to make agreements legally to restrict production, and of course, quite impossible to regulate demand, we shall always have periods of good and poor business. The only thing the industry as a whole can do to restrict its losses during periods of poor business, is to see to it that every manufacturer keeps himself well informed regarding his costs, and if we are to rely on the statements of the Chairman of the Federal Trade Commission, there is no legal objection to groups of manufacturers agreeing not to sell their products below these costs. Such agreements, of course, will be worthless if manufacturers do not know what these costs are, hence the necessity for, and the importance of, having thoroughly reliable cost figures. Another point which must not be overlooked is that there is a surplus machine capacity within different groups of the industry which make it doubly necessary that all manufacturers should use reliable cost methods if they are to compete fairly one with another.

The Cost Association for several years past has been impressing these points on paper manufacturers. The officers of the Association believe that the best approach to the solution of the problem of getting all manufacturers to realize these facts is by means of standardized cost estimate sheets, because these sheets which have been carefully drawn up, will contain a list of every item which enters into the cost, so that it will not be possible for any manufacturer to overlook any of these items when making up a cost estimate.

The next step is to get manufacturers to ask their cost departments to compile cost estimates on supposition orders in order to ascertain whether these departments use the forms in a correct manner, or whether some manufacturers have already devised a better form which can be used by the whole group instead of the one devised by the Association. This, of course, is only a beginning.

To carry the work still further, it should be possible to obtain from groups of manufacturers cost figures relating to separate operations, and by compiling a composite report from these figures, enable them to make comparisons on a fair basis. Such comparison should enable them to form a fair judgment regarding the manufacturing effi-

ciency of their mills, as compared with other mills making the same products. Ignorant competition, meaning competition from manufacturers who are not reliably informed regarding their manufacturing costs, is the bane of all industry, and in times of depression is particularly rife in the pulp and paper industry. This is because, perhaps, it is an old established industry which has, however, grown tremendously within the past decade. Unfortunately, as in some other industries, it has not had a real leader to guide its destinies, but like "Topsy" it has "just growed." However, there are several groups of far-seeing executives within the industry who realize the handicaps under which it is operating, and are striving to remove them. One of the greatest of these handicaps is "ignorant competition," which can never be removed until the fact is brought home to the manufacturers who form the "ignorant group" that they are really within that class, and they are shown how to get out of it. Let the leaders within the industry but once make up their minds that this work *ought* to be done, and it *will* be done, and when it has been accomplished the way will have been opened for the carrying out of many other plans for the industry's further progress and growth because the industry will then be operating on a sound, economic basis, and manufacturers will be in a position to supply the funds necessary for the financing of these plans.

COST OF DE-INKED NEWSPAPER

Mills located near cities capable of furnishing large quantities of old newspaper can produce pulp from de-inked news cheaper than they can buy new groundwood, according to cost data collected by the U. S. Forest Products Laboratory, Madison, Wisconsin. A saving of $15 a ton has been effected at one mill through the use of de-inked news instead of groundwood pulp. Such a saving would bring in a large return on the $10,000 investment needed to equip an ordinary 30-ton mill with the additional washing equipment and a warehouse large enough to hold a three months' supply of old newspapers, and it would make possible the profitable operation of some mills now finding it difficult to make both ends meet.

The itemized figures given below were obtained in a mill operating at the rate of 40 tons of de-inked newspaper stock per day. The labor, repair, and maintenance figures are taken from the yearly average for that mill. The cost of power and equipment for beating the old papers is not included since it would be the same where purchased pulp was used.

Cost of Producing One Ton of De-inked Newspaper Pulp:

Labor and expense		
Labor	$1.58	
Labor (general and repair)	.49	
Fuel	.82	
Power	.48	
Repairs	.51	
		$3.88
Materials		
Old newspapers, 2,070 pounds at 1c.	$20.70	
Lime, 21 pounds at ¾c.	.16	
Soda ash, 33 pounds at 1½c.	.50	
Bentonite, 155 pounds at 1¼c.	1.94	
Water, 13,000 gallons at 8c. per M gal.	1.04	
		$24.34
Miscellaneous charges		
Royalty, taxes, interest on investment in washer equipment, etc. Would not exceed	3.78	
Total cost		$32.00

Relative Costs of Furnish per Ton of Newsprint

Using groundwood	
0.9 ton groundwood	$40.50
0.2 ton sulphite	12.00
Labor handling groundwood laps	.50
Total cost	$53.00
Using reclaimed old papers	
1.0 ton de-inked newspapers	$32.00
0.1 ton sulphite	6.00
Total cost	$38.00

To make the most out of the de-inked process, it is absolutely necessary that the mill be independent of the periodical manipulating of the waste-paper market. For mills situated near the larger cities such a course is very simple. In fact, a large part of a mill's supply might be collected by its own force from the neighboring territory, thereby cutting out the profits of at least three middlemen.

In stabilizing the supply of waste papers the publishers can be of enormous assistance, since the supply is directly dependent upon the amount of paper saved by the average householder. With proper newspaper campaigns, such as were carried on during the war, the supply of waste newspapers could be doubled without much effort; and if with proper warehouse facilities the demand were stabilized, the supply would continue.

With a more constant demand, the need of so many agents between the householder and the paper mill would be avoided, and the householder might receive at least 50 per cent of the price paid by the paper mill instead of only about 10 per cent, as is often the case.

MUST COME TO THE SUSTAINED YIELD

Mr. George W. Sisson, Jr., former president of the American Paper and Pulp Association, at a conference held in Chicago, stated that in the northeastern States, where the Pulp and Paper industry is concentrated to a degree found in no other section, and where the forests have been heavily overcut for many years, the industry cannot operate *without the importation* of a large percentage of its wood.

No country on the globe exports pulpwood in the raw, except Canada. Canada's export of pulpwood amounts pretty close to 1,250,000 cords per year. The pulp and paper manufacturers of the U. S. A. are anticipating an embargo on Canadian pulpwood for some time. As far as the actual supply of timber is concerned Canada is in the same plight as the U. S. A. Canada is to-day assuming the lead in the pulp and paper industry and in order to keep that lead there is only one course open for Canada: it must at all costs retrieve its wasted and diminished fortune and most of all really protect the coming second growth, and further inaugurate a policy of cutting for a sustained annual yield.

Such measures are absolutely necessary to save for Canada its prominence as a pulp, paper and lumber producing country and save the country from the ranks of the "Has Been."

Fort Frances, Ont., FRED BROWN.

How To Establish An Export Department

Their trade was entirely confined to their own country. They conceived the idea of adding an export branch to their business. They made a careful study of the world's markets and ascertained which countries were the principal consumers of the commodity they manufactured. They then proceeded to get the market prices ruling in the various countries and the names of the leading importers. They allocated their stocks proportionately to the requirements of the countries The next procedure was to send samples and quotations calculated to secure the trade to the prospective customers, giving them a firm offer for a certain period of a limited amount, at the same time issuing a brief market report on the commodity, showing all the available stocks known and price fluctuations. In many cases offers were made for their entire output, but the answer was always to the effect that they would not supply more than the prescribed amount allotted to each individual territory, as their other customers' requirements must be complied with. The direct result was that in a very short time they had built up a regular trade spread over the whole world and could look forward to the sale of their entire output at remunerative prices year after year through the same channels. Had they followed the lines of least resistance and allowed one firm to purchase the whole parcel they might have made more money the first year, it is true, but each succeeding year would have brought its own troubles, and, by not putting all their eggs into one basket, they have established world-wide connections and now virtually control the agar-agar trade of the world. Apart from this line they have utilized their overseas correspondents for various other goods, to mutual advantage.

These two illustrations are well worthy of the attention of all those contemplating adding an export department to their businesses, and conclusively prove the value and necessity of a careful study of the trade possibilities and requirements, as well as the impossible trade barriers, which exist in every country.

However, let it be assumed that the investigation made denotes the practicability of overseas trade in any line handled. By the addition of an export department a trader may materially add to his returns, and the greater number of countries to which he can extend his operations the better in the long run. When one country suffers from a drought and crops are short in consequence, business there is naturally checked, but it is usually the case that other parts of the world produce bumper harvests, resulting in high prices and prosperity. — Commercial Intelligence Journal.

YOU CAN'T KEEP THEM DOWN

Last week the factory of Gummed Papers Limited of Brampton, Ontario, was struck by lightning and severely damaged. The loss was very considerable and the disarrangement of the business of course, put a temporary stop to operation. It is gratifying to note, however, that this Company is not at all lacking in courage and determination, for we understand that within two weeks the concern will again be operating at capacity, in fact a part of the plant is already turning out its products.

It may be stated in broad terms, writes a correspondent in the London "Times Trade Supplement", that an export department added to a business automatically acts as an insurance for home trade, and it is possible for a very large proportion of manufacturers and traders to introduce such a department into their business at small expense and with every prospect of satisfactory results, provided they approach it intelligently.

Naturally the first thing a trader must consider is which markets offer the best prospects for the particular lines in which he is interested. He must study the peculiarities, the manners, and the customs of the country he selects; he must remember that the people he wishes to cultivate are of a different race, temperament, and probably language; that they have different ways of thinking, different business methods, different laws, and in the majority of cases vastly different custom house laws and regulations. In short, in order to achieve the greatest success he must adapt himself and his tactics to his customers' ideas, whims, and fancies. To him they may seem peculiar, but he must always remember that it is he who is the foreigner, not they. Profits are usually considerably greater than those secured in the home trade, while the expenses of conducting the department are certainly no higher.

Study of the Markets

A careful study of the markets is a very necessary preliminary, and much exceedingly valuable information can be obtained from custom house returns. Such study frequently results in material saving of expense, since what will be keenly appreciated in one country will fall flat in another, and no amount of energy and push will ever render it successful. As an illustration of this may be mentioned an utterly futile campaign of American manufacturers to market certain breakfast foods in South America. The cereals were lavishly advertised, house-to-house distributions of free samples made, demonstration booths were erected in stores, hotels, and clubs, where dishes were served without any charge in the most tempting styles to all willing to try them. Enormous sums were lost in this propaganda, since the products utterly failed to appeal to the public. The campaign was not confined to one country, but was prosecuted throughout practically the whole of Latin America, each country producing negative results.

Had the manufacturers but made a study of the markets and the peculiarities of the inhabitants they would have been saved much loss of both money and prestige. Customs of countries are always difficult to eradicate, and particularly is this the case when they date back for centuries and become traditions. A survey of even the methods of living of Latin races would have at once elicited the fact that their breakfast is of the lightest, and never varies from coffee and rolls.

As an illustration of good marketing may be cited the case of a prominent Japanese firm who manufactured agar-agar. Their output grew until it was far larger than their home market demanded. Prices were rapidly falling and they were faced with severe losses.

PAPER MAKING INDUSTRY IN JAPAN

(Special to Pulp and Paper Magazine.

Paper and pulp industry of Japan had a very dull business year in 1922, but on entering into the present, better market conditions abroad, non-importation of lower grade of paper from outside together with decrease of heavy stock accumulated made a great improvement, at least gave a great encouragement to the trade. This condition induced the Japan Paper Association, an organization that embraces all the leading paper and pulp mills in Japan, to adopt a new price, advancing one sen (½c.) in Feb. and a further ½ sen in March and April. Chemical pulp, consequently, that was quoted at 6 sen is now being quoted at 8.3 sen.

Owing to this favorable condition the Association removed the ban on 10 per cent production-control that was observed by all the association members for some time past. Thus the total production of the last six months will be greatly increased compared with that of the preceding period. Besides the removal of the production-control, there are some mills which have completed the installation of new machines indicating increased production.

As to the Pulp Industry, heavier stocks were accumulated and there are some pulp mills still idle. However, on the whole, pulp production for the last six months will doubtless show an increase under the same conditions as paper making industry.

The sales records of paper mills are showing better business turnover, but on the other hand costs of production have increased at the same time. Though the price of pulp advanced no leading paper mills have suffered seriously, as such large mills own their pulp mills to supply their requirement to a great extent. Under the favorable market conditions these paper mills must have gained profit 15 per cent above that of the preceding period.

To illustrate, two leading paper mills in Japan will give hte following reports.

Oji Paper Mill, Ltd. Total production of the last six months will be about 117,761,000 lbs. against the total sales of 118,739,000 lbs. Compared with the preceding period (May-Nov. '22) an increase of 6,326,000 lbs. in production and 13,424,000 lbs. in sales. The surplus of sales against production shows so much accumulated stocks disposed of. Though their Chosen (Korea) mill was closed, the pulp business of this company showed a very good turnover. Oji's total profit for the last six months will exceed Yen 4,000,000 (about $2,000,000). The dividend, however, will be declared at 17 per cent per annum the same as last, making a sufficient reserve to be carried over.

Fuji Paper Mill, Ltd. Total production of the last six months will be 133,952,000 lbs. against the total sales of 140,070,000 lbs. This shows an increase of 19,217,000 lbs. in production and 27,700,000 lbs. in sales. This company's straw board and pulp business proved a profitable business, and the dividend for the last six months will be declared at 15 per cent per annum same as the previous period.

FOR POSTERITY

A man does not plant a tree for himself, he plants it for posterity. And sitting idly in the sunshine, I think at times of the unborn people who will, to some small extent, be indebted to me. Remember me kindly, ye future men and women!

—Alexander Smith.

INSTITUTE ITEMS

FLOW OF STOCK IN PAPER

An answer to "Piper"

With regard to your work on the Flow of Stock in Pipes, I would refer you to the Pulp and Paper Magazine of March 2nd., where on page 160 is the conclusion of an article on Pumps. You will find here some information that I think will be of service to you.

In this connection, I was talking to an engineer and mentioned the subject of your letter, when he said that municipalities had discovered that in pumping sewage, better results were obtained by using a pump that had a low efficiency with water. It was found, however, that in pumping sewage, it was better to use a relatively small pipe so as to have a continuous flow throughout the total area of the pipe rather than to use what would naturally be chosen as a larger pipe so as to eliminate surface friction. The idea of using a smaller pipe is to prevent sedimentation of stock in suspension. This principle, I should think, would also apply to the pumping of pulp.—Editor.

A FRANK COMPARISON

One of the numerous College graduates taking our University extension course in Pulp and Paper Making, writes as follows:

"With regard to Volume III, (and I presume Volume IV and V also) I would just as soon learn the subject from the textbook as listen to lectures. I find the textbooks very clear, and the drawings and descriptions are excellent. After all, if a man is familiar with the mill-end of the business, he will derive probably more benefit by studying the books himself than he would by lectures alone, although it must be admitted that a combination of the two would be the ideal."

The writer goes on to say that he thinks a man with little previous education would have difficulty in studying Volumes I and II, but it is the experience of the Institute that a man who can only read and write, if he applies himself to the work, can make satisfactory progress with these elementary studies — in fact, his brain power increases as he applies himself.

ONE ON THE WORM

Cuthbert had been listening for half an hour to a lecture from his father on the evils of late nights and late risings in the morning.

"You will never amount to anything," said the father, "unless you turn over a new leaf. Remember, it's the early bird that catches the worm."

"Ha, ha!" laughed Cuthbert. "How about the worm? What did he get for turning out so early?"

"My son," replied the father, "that worm hadn't been to bed all night, he was on his way home."

BOOK ON BURNING OIL

The Combustion Equipment Corporation has prepared a new oil burning equipment catalog which is an important contribution to the subject of oil burning. The catalog is now ready for general distribution to all who care to apply for it. The pamphlet is really more than a catalog; it is a treatise on the handling and combustion of fuel oil, with information on the design of furnaces, etc.

The Woodlands Section

PERPETUATING A PULPWOOD SUPPLY

By D. E. LAUDERBURN,

Forest Engineer, Department of Woodlands, Pejepscot Paper Co., in "Canadian Forestry Magazine

The job of a woodlands department of a paper company is to see that the supply of the principal raw material is continuous for as long as the business lasts. Either the company has in view a time when it plans to liquidate or it plans to continue producing indefinitely. The Forest Engineer therefore, as technical adviser to the management, has before him the problem of having the forest properties in as saleable condition as possible at the time of liquidation or the equally interesting task of seeing that the supply of pulpwood is perpetual at a fixed amount per annum.

In the case of the Pejepscot Paper Company, the latter policy, that of continuous production with an annual fixed perpetual consumption, is the one being followed. That, therefore, is the essential task of the Forest Engineer, to study the resources available with a view to supplying perpetually a fixed amount of wood each year.

The first step in the management of a timber property is the taking of the forest inventory, in other words, the timber estimate. A complicating factor here, however, is the fact that a forest is not a stable thing. The trees are constantly growing or dying. And yet, for practical use, the forest inventory must not only be kept up-to-date but must be projected tentatively into the future. We must not only know what we have, but what we are going to have. The forest is like a storehouse. All that is in it and goes into it must be charged to it; all that comes out should be credited. The forester is the clerk who keeps the records. But the clerk at the storehouse can stand at the door and count all that goes in. Not so with the forest. What comes in, is a layer of wood laid on each living tree under the bark, something unseen, the cumulative effect only being visible after a period of years.

To ascertain all the facts appertaining to the perpetual forest inventory, the Pejepscot Paper Company is carrying out what might be called a permanent cruise. Cruise lines are run systematically throughout the properties. Quarter-acre plots are laid off at regular intervals on the cruise lines and tallies of the timber made on these plots. These plots are permanently established by blazing a tree at or near the center and scribing on it the number of the tree and the cruise line. The cruiser tallies all trees he thinks will survive to maturity. Borings are made in a specified number of trees on each plot and the rate of diameter growth is recorded. Thus the forest storehouse clerk tallies the goods coming in. From these measurements of diameter growth and from measurements of the heights of trees of each diameter the volume of these trees at future periods is estimated and the result shown in yield, cords per acre per year, usually a fraction of a cord on each acre annually. It is planned to check these growth predictions in the future by measuring and tallying these permanently established plots over again, perhaps every five or ten years.

The following hypothetical tabulation shows how a perpetual forest inventory might appear:—

	Cords.
Original Capital Stock	135,099
Cut, Winter of 1917-1918	11,963
Left, Spring of 1918	123,136
Growth, Summer of 1918	5,722
Capital Stock, Fall of 1918	128,858
Cut, 1918-1919	9,533
Left, Spring of 1919	119,325
Additions by Purchase 1919	10,840
Original Stock & Purchase	130,165
Loss from Fire & Budworm	12,976
Capital Stock after Deducting Losses	117,189
Growth, Summer of 1919	5,931
Capital Stock, Fall of 1919	123,120

The above tabulation shows that cutting at the rate of 10,000 cords per year will eventually deplete a property with an annual growth of 5,000 cords. Another property may show the reverse, annual cutting less than the annual growth. Thus the operations may be adjusted to what the various properties will produce. If the studies show more is being cut than is growing, more forest land should be acquired or the yield in the future increased by planting, thinnings, girdling of wolf trees or any other means applicable.

The precision with which all this can be done is questionable, of course, but it is not difficult to arrive at an approximately accurate estimate of yield which may be used tentatively until we learn more about the rate of growth and also the rate of death, in our forests.

The company requiring a sustained yield, however, cannot be satisfied with merely ascertaining that yield. The lands must be made to produce their maximum of the most desirable species. With this in view, the Pejepscot Paper Company has planted many hundreds of acres of old fields where natural seeding in was slow. Well-stocked cut-over lands and abandoned farms have been purchased. Properties essentially hardwood will be stripped of their pulpwood and held for their hardwood yield or sold.

That, essentially, I feel, should be the forest policy of a company requiring a continuous and perpetual supply of any wood material. Forestry is not for show or advertising purposes. Forestry is absolutely essential for the efficient management of any forest property.

Do not be a careless camper. Extinguish all fires after every meal. Before breaking camp make a general survey to prevent bush fires. Make the woods safe for others.

ABSTRACTS OF FORESTRY ARTICLES

B-2 Reforestation in Ontario. E. J. ZAVITZ. **J. For.** XX No. 1 (Jan. 1922, p. 18). Discusses forest types and stands of the Province. Estimates that 10 million feet of white and red pine for the Province is an outside figure. "In little more than half a century we have almost exhausted the virgin supplies of our most important saw timbers." "We are cutting annually at least 100 million board feet more than our pine areas are producing." Natural regeneration cannot meet our future requirements of pine. Thousands of square miles will not reproduce white and red pine for centuries to come, unless they are artificially introduced. This is largely the result of fire. Advocates the reforestation of 10,000 acres of denuded Crown lands annually to white and red pine. Five planting stations could be equipped for $100,000, and annual maintenance would cost $50,000. The annual planting budget at $15 per acre, would be $150,000. In 60 years, the new forest would produce at least 400 million board feet each year, or 50 million feet more than the present annual cut.-C.L.

B-2 Research Work of the Dominion Forest Service. W. G. WRIGHT. **J. For.** XX No. 1. (Jan. 1922, p. 62). The object of this work is to determine how best to secure a continuous crop of desirable species in cut-over lands. This involves cutting regulations or re-planting, or both, according to local conditions. Studies are under way in Ontario, Quebec and New Brunswick, in co-operation with provincial forest services and pulp and paper companies, as well as on Dominion forest reserves in the West..-C.L.

B-2 American Trees in Scotland. JOHN SUTHERLAND. **J. For.** XX No. 1. (Jan. 1922, p. 71). Douglas fir and Sitka spruce are most used for planting in Scotland. The Coast type of Douglas fir is preferred to the Interior or mountain type. The first plantation of this species was established in 1860; at 52 years the average height was 88 feet, and the volume in 1914 with 143 stems per acre was 6,276 cubic feet; when 40 years old two hundred pounds sterling per acre was offered for the crop. Measurements are quoted for other plantations, and the adaptability of several North American species to sites is discussed. In the extensive planting program of the British Forestry Commission, six per cent will be Douglas fir and 17 per cent Sitka spruce.-C.L.

B-2 Progress of British Forestry. EMPIRE FORESTRY JOURNAL 11 No. 1, (April 1923 p. 15. The program of the British Forestry Commission includes the planting up, of 150,000 acres in 10 years. To March, 148,000 acres had been acquired. Financial aid is given to encourage planting by private landowners, 10,000 acres having been so reforested last year. This work has aided toward solving the unemployment problem.-C.L.

B-3 Some Problems of Forest Pathology in Ontario. DR. J. H. FAULL. **J. For.** XX No. 1. (Jan. 1922, p. 67) But rots constitute the outstanding destructive agencies at work in Ontario forests; to these all forests are more susceptible with increasing age. They decrease the value of stumpage and are responsible for most windfalls, with resulting increase in fire hazard. The needle blight has also caused a great deal of damage, particularly to white pine but affecting other species as well. The cause is not definitely determined, but it may be due to periods of drought where soils are shallow or leachy. Our knowledge is greatly deficient as to the diseases of trees. C.L.

B-9 Timber Administration of the Dominion Forest Service. T. W. DWIGHT. **J. For.** XX No. 1. (Jan. 1922, p. 4). Describes the administration, protection and research work connected with the 22 million acres of Dominion Forest Reserves in Western Canada. These areas are administered by technically trained foresters. Fire has reduced the area covered by virgin forests to less than 10 per cent of the original. Much of the remainder is covered with aspen and young coniferous growth. In the granting of timber sales, it is stipulated that only timber designated by the forest officer shall be cut. Trees are marked for cutting, so that each part of the stand can be treated in the way that seems to best suit the conditions. A great improvement over unregulated logging has been achieved. It is required that brush from all timber cut shall be burned. Lopping and scattering has been found unsatisfactory has been found unsatisfactory. The tendency is to burn the brush as soon as the trees are felled. Successful brush disposal at a moderate cost is only secured when it is accepted as a regular part of logging operations.-C.L.

B-9 Status of Forestry in Western Canada. W. N. MILLAR. **J. For.** XX No. 1. (Jan. 1922, p. 10). Outlines development of forest administration in the Prairie Provinces and British Columbia. Extension of Dominion forest reserves, and re-organization of administration and policies. Organization of British Columbia Forest Branch. Fire protection work of Dominion Railway Commission. Slash disposal required on all timber sales in Dominion forest reserves. Grazing administration. Aerial fire patrol by Air Board. Nursery and planting work of Dominion Forestry Branch. Forest Products Laboratories and field research in forestry. Forest School at University of British Columbia.-C.L.

B-9 The Forest of Quebec. G. C. PICHE. **J. For.** XX No. 1, (Jan. 1922, p. 25). The merchantable forests of the Province are estimated to cover 130 million acres, of which six million acres are privately owned, the balance being Crown lands. Licenses to cut timber, have been granted on 44.5 million acres of Crown timber land. These licenses are renewable annually. From 1867 to 1920, Crown timber revenues have totalled $48,148,220. Enormous damage has been caused by fire, wind, insects and fungi, and the annual increment is very small. Discusses the economics of the logging industry in the province; and reforestation of waste lands by the Forest Service and by private agencies. The present annual cut for licensed lands is one billion feet, or an average of around 20 board feet per acre, which the author considers to be much less than the annual growth. He therefore forecasts the possibility of a substantial permanent increase in the rate of cutting, provided there be adequate protection from fire, coupled with the adoption of methods of exploitation calculated to leave the cut-over lands in a condition to produce another crop. The present plan of heavy cutting on small areas should be changed to a selection system over larger areas, removing half the stand and coming back each 40 years for another cut.-C. L.

B-9 Forestry Problems in British Columbia. P. Z. CAVERHILL. **J. For.** XX No. 1. (Jan. 1922, p. 44). The total area of the province is 355,000 square miles, of which 155,000 square miles may be classed as forest land. Of this, 50,000 square miles contains merchant-

able timber estimated at 366 billion feet. There are 100,000 square miles of old burns in various stages of restocking. The first and greatest problem is protection from fire and insects. Co-operation of all agencies concerned is being secured and mechanical equipment and personnel are being increased. Attention is paid to securing closer utilization of material in the woods, and to the development of domestic and foreign markets. Some progress has been made toward correct silvicultural practice and research is under way to add to the knowledge of what practicable measures are necessary to ensure forest growth of desirable species on cut-over lands. In all cases, the urgent necessity is emphasized of preventing the recurrence of fires. -C.L.

B-9 Forestry Administration in New Brunswick. G. H. PRINCE. **J. For.** XX No. 1, (Jan.. 1922, p. 54). Area of the province 17.5 million acres, of which 12 million acres are forest. Of this, 7.5 million acres are Crown lands, 4.5 million acres of forest being in private ownership. Eighty per cent of the forest area contains merchantable softwoods; the hardwoods remain largely untouched. Over one-half of the provincial revenue is from Crown forests. The annual cut on Crown lands is 250 million feet, and on private lands 350 million. Administration of Crown timber lands is under the Provincial Forest Service. Diameter-limit regulation of cutting applies to red and white pine and to spruce (112 inches), also to jack pine (10 inches). The large private holdings are also operated on a sustained-yield basis, closely similar to Crown lands. Forest fire legislation is thoroughly modern. A very intensive classification of Crown lands is under way, four million acres having been covered. This forest survey has proved exceedingly valuable for purposes of administration. Forest research is under way, in co-operation with the Dominion Forestry Branch, following the dissolution of the Commission of Conservation.-C.L.

B-9 Report of First Annual Meeting of British Empire Forestry Association. EMPIRE FORESTRY JOURNAL, 11, No. 1, (April 1923, p. 24). Presided over by the President. H. R. H. the Prince of Wales, whose address summarizes briefly the situation as to timber supplies within the Empire.-C.L.

B-9 The Indian Forest Department. R. N. PARKER. Empire Forestry Journal, 11, No. 1. (April, 1923, p. 34). Forest policy in India dates from 1855. The work of the Forest Department is described, and its difficulties discussed. In all cutting operations, particular attention is paid to the regeneration of valuable species. In some cases this is brought out by the method of cutting adopted; in others, planting must be resorted to as in the case of teak where plantations require tending and periodical thinnings for 30 or 40 years. Wastage in woods operations was heavy in the past, but is now largely overcome. Progress has also been made toward the utilization of subsidiary or less valuable species, thus making for a better representation of teak, sal or deodar, as the case may be in the future forest. A research Institute is maintained at Dehra Dun, for investigations in silviculture and in forest products. Plant for paper making on a commercial scale is being erected at Dehra Dun, for tests with bamboo and grass. A creosoting plant and modern dry kilns are also in process of erection. A large amount of timber testing has been done, to determine uses for the many species of timber.-C.L.

THE WAGES OF CARELESSNESS

I am one of the many employees who are fortunate (?) enough to own an automobile. I have questioned the word "fortunate" because it hinges on how I drive, and again, on how fast the other fellow wishes to pass me.

The other evening, while going home from work, I was driving easy (of course they all say that, but I really was) when, without even a toot of the horn, a car whizzed by. The next moment I heard the grind of brakes, sounds of breaking glass, and a loud scream. I saw the car skid as it attempted to stop instantaneously. (Right there I proved the assertion I made of driving "easy," for, if I hadn't my car would be lying in the ditch — and I, in all probability would have completed a double funeral).

Upon alighting, I found a small boy — one of those chubby, freckle-faced youngsters — lying in the road — just about conscious, and that's all —with blood streaming from an ugly gash on his head, and with a broken arm, to say nothing of a twisted ankle and various bruises. A bent mass of frame-work and spokes told mutely of the remains of a good "bike". The little fellow, who had just as much right on the highway as any motor car, had evidently been riding absolutely within the law, on his right side of the road. But the "speedhound" who dashed past my bus didn't reckon with that, and the consequence was a head-on collision.

Oh, the pity of it! The folly of always trying to pass the car ahead! Had the driver sounded his horn, he might have avoided maiming someone's precious boy, a buckled car, a big bill — somebody has to pay for damages, and, most important of all, severe pain, and a mother's sorrow.

It might have been your boy, or mine. It was someone's boy, and all that trouble because "Safety First" was the last consideration that counted. Why is it that in every hundred automobile accidents, records show that seventy-three per cent are avoidable? Don't let us get hardened to safety. It is not a byword to look at, and then promptly forget. I cannot think of another word in our language which means so much. Lives, money, material, health, prosperity, and everything we have, or should possess, are contingent on that one little word.

Walking, driving, working, playing, let's remember Safety First!

(Courtesy, The Kodak Magazine)

SOLD TIMBER LIMITS

18 square miles of timber limits at Rawdon, Que., placed on sale by the W. H. Miner Lumber Company. There was a large attendance of lumber men, and for a time the bidding was spirited, although no one seemed anxious to run the price up. Eventually the limits were secured by R. Quinn and Company Registered, of Windsor, Que., for $15,150, which was considered a fairly low price for so extensive a property.

WHY NOT USE OUR OWN TIMBER?

The United States exported 2,374,000 feet of southern yellow pine lumber to Canada during April, according to figures issued by the Department of Trade and Commerce. The amount of oak lumber shipped to the Dominion totalled 4,233,000 feet. Great Britain headed the countries importing the latter grade of lumber with 7,633,000 feet. Canada came second.

UNITED STATES NOTES

According to the research department of the National Lumber Manufacturers' Association, the Indians of the United States own, individually and tribally, about 7,000,000 acres of forests of commercial importance. The principal Indian forests, whose combined area covers an extent equal to Massachusetts and Connecticut, are situated in Oregon, Washington, Arizona, New Mexico, Wisconsin, California, Idaho and Minnesota. These forests contain 35,000,000,000 feet of merchantable timber worth about $1,000,000. They are under the supervision of the Indian Forest Service of the United States Interior Department, which recently sold great quantities of timber from the preserves. All the Indian tribal forests standing on non-agricultural land are administered by the Indian Forest Service on the principle of continuous lumbering and preservation of the forests as a whole. Only the mature trees are cut, and the young growth is carefully protected during logging operations and from fires.

A new paper distributing company styled the Culbertson Paper Company is being organized by Dwight Culbertson, former manager of the New York branch of the Allied Paper Mills of Kalamazoo, Mich. The new concern will operate in Cincinnati and will deal only in high grade papers used for advertising purposes, including writing, cover and text.

Finch, Pruyn and Co., Inc., Glens Falls, N. Y. have installed in their mill the new proportioning and metering system of the Trimbley Machine Company, making it possible to shut down three jordans and four beaters, economizing on power and labor and insuring more uniform paper. One beater is used to break up the laps of pulp, but the mixing and proportioning is done by the Trimbley system.

The Interstate Commerce Commission last Thursday dismissed the complaint of the Tidewater Paper Mills Company, of New York City, against the New York Central and Bush Terminal Railroad Companies, which alleged that the present rates on wood pulp in carloads from points in Ontario and Quebec, Canada, to New York are unreasonable.

The New York State Forestry Association announces that more than half of the forest fires in 1922 in New York State were caused by smokers, hunters, fishermen and campers. One hundred and ninety-six fires were directly traceable to smokers alone. The laxity of hunters and fishermen were chiefly in the form of carelessness in burning rubbish or the pernicious habit of leaving a camp fire before it is actually dead, or without taking the precaution to cover it deep enough for safety. The Forestry Association has discovered a way to remind the wood wanderers of the fire danger by distributing paper lunch bags containing in bold type an effective fire notice. Usefulness is combined with suggestion, and the association reports that many hitherto careless smokers and campers have enrolled themselves as agents of prevention because of the appeal.

Manager W. P. Lass of the Speel River plant of the Alaska Pulp and Paper Company reports that the mill is running to capacity and has three shifts working. The output has been boosted to 40 tons of pulp daily. Six hundred tons are stored on the docks at the plant awaiting shipment to southern mills. Mr. Lass paid a visit to Juneau to arrange for transportation for this stock. "We have plenty of power, lots of logs, and men enough to keep grinding continuously," Mr. Lass was quoted as saying in Juneau. "All we want now is to have the transportation companies keep our docks clear." An Admiral Line freighter will call at Speel River southbound and take on a cargo of the pulp now on hand.

The Forest Mills at Yarmouth,Me., a subsidiary of the S. D. Warren Company, was forced to shut down its plant last Saturday due to a slump in the fiber pulp market. About 200 mill operatives were thrown out of work for an indefinite period.

The Marathon Paper Mills Company, Rothschild, Wis., has purchased from the Longyear estate at Marquette a large tract of timber land, paying $423,302 for the property. The tract is situated east of Wakefield.

Wm. L. Nixon, formerly production manager of the Chemical Paper Manufacturing Co., and Leon M. Yoerg, until recently with the Carew Manufacturing Company, South Hadley Falls., have assumed their new duties in the plant of the American Writing Paper Company, Holyoke, Mass. The former is in charge of production in the coarse paper mills, and Mr. Yoerg is manager of production in the fine writing paper mills.

W. Goodrick Jones, president of the Texas State Forestry Association, in a recent appeal to the legislature of that State for reforestation appropriations, declared that Texas is threatened with a total loss of its forests. A generation ago Texas had 12,000,000 acres of vigin pine. To-day there are left only 1,500,000 acres of this timber uncut. By 1933, according to Mr. Jones, at the present rate of deforestation there will not be enough pine left to keep lumber producing concerns running. The great mills will be forced to shut down. In ten years, or less, senseless waste, fires and, above all, cutting without planting, will have done their work to a finish. Mr. Jones asks the Lone tar Legislature for $100,000 to be spent in the purchase of large tracts of the cut over acres now lying idle and unproductive. With this land reforested, foresters say that within from twenty-five to forty years the new forests created will pay the State 200 per cent. on its investment.

The work of the Woodlands Section of the American Paper and Pulp Association is covered in a booklet just published by this organization. It gives the proceedings of the third annual meeting of the section and details the important work which is being done. The report of O. M. Porter, secretary, shows that a great many activities are under way to fulfill in as large measure as possible the purposes of the Woodlands Section.

1300 PAGE CATALOG

The Westinghouse Electric & Manufacturing Co., have an exceedingly complete catalogue of electrical supplies, and other equipment furnished by this Company. The very fact that it contains over 1,300 pages is an indication of its completeness, and persons familiar with the character of materials turned out by the Westinghouse Department of Publicity will be assured of its high quality. Each section is marked by a cut in thumb space.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, July 3.— Business in the Montreal district has picked up slightly, although some jobbers would be disinclined to agree with this statement. The position, on the whole, is good and there is no reason for pessimism. Trade generally is on a sound basis, the outlook being for an improvement rather than otherwise.

The withdrawal of prices by some paper mills has been criticized as likely to affect adversely the sale of Canadian products, the assumption being that the withdrawal is preliminary to higher prices. The mills affected, however, have no doubt considered the question from all angles. The rising costs have forced readjustment, so that the commodities will give a reasonable return on the invested capital.

Imports of paper into Canada during May totalled $785,529 as compared with $734,065 in the corresponding month of 1922. The imports of cardboard and other paperboard did not show material alteration, increase in some lines being offset by decreases in others. There was a substantial decline in vegetable parchment paper, while wrapping papers increased by $10,000. Hangings or wall papers were up by about the same amount, roofing and building papers were slightly lower, toilets and towels in sheets were down $8,000 and other papers $16,000 lower. In paper goods, boxes or containers increased $36,000, while other manufactures not otherwise particularized jumped from $185,000 to $217,000.

The imports of British papers show a tendency to advance. During the first four months of this year 123,168 pounds of bonds, writings and ledgers were sent to Canada and in the same period we imported 281,155 pounds of book papers. The Old Country is competing for certain lines at prices which in some instances are below Canadian quotations.

The newsprint market is firm. The demand naturally declines during the summer months, and although the Canadian mills are still running full time, there is not that urgent call for paper which characterized the market in previous months. The production of the mills which recently came into operation has been readily absorbed. The Bathurst Company will soon be turning out paper, this adding to the increasing number of Canadian mills.

Other lines are pretty steady. The mills are securing satisfactory orders in writings, books and ledgers. The wrapping section is moderately busy, and there is a fair amount of trade in lightweight papers.

In the pulp section, some mills are oversold for groundwood. There is no surplus, while the demand is good. Should the prohibition of pulpwood export materialize, it is likely that the call for Canadian groundwood would substantially increase, with a consequent advance in values. Kraft is firm, with good orders to hand. Bleached sulphite keeps its price, although there is a tendency for buying to slacken slightly, which is the usual procedure during the summer season. A cable received in Montreal states that the strike in Norway is general, except for the iron and steel and building trades.

The price of pulpwood is around $20.50 per cord, delivered, dealers expressing the opinion that it may go higher on the ground that the supply is not excessive. American buyers of course look at the position from a different point, although this may be soon altered if the power to prohibit the export of pulp-wood is put into force by the Government. In connection with this subject, it should be remarked that the Federal Government has definitely stated that if the export is prohibited an exemption will be made of such wood as is grown by farmers or settlers on their own property. This no doubt would be regulated by a licensing system.

Ontario Market News

The month of June closed with a somewhat improved condition in the Ontario paper trade which had been somewhat stagnant since the month opened. There was a disposition in some quarters to ascribe to the Provincial election campaign, and its attendant dislocation of trade, the responsibility for a few weeks of light buying of paper, but now that the political stage is cleared and the effects of the first stage of the holiday season are over, business in the pulp and paper trade is expected to regain something like its old stride. With most of the jobbers in Toronto and district the latter part of the month produced good business, though. Generally speaking, June was a quiet month and the effects of a curtailment of orders were felt not only by the jobbers well. The book paper trade, however, has kept up but by the manufacturers of some lines of papers as well and there has been no slackening off in production or sale in this line, although there has been a rather light call for bonds, writings and ledgers. The wrapping paper trade appears to be coming back again after some weeks of slow selling and the same may be said of the tissue and toilet paper trade which was quiet during the greater part of June. Mills manufacturing the lines just noted are quite busy now and are having no difficulty in disposing of their output. Specialty tissue lines, such as towels, napkins etc., are having a good call now that the picnic season is on. Manufacturing stationers are only fairly busy, but they are using considerable paper, while envelope manufacturers for the most part are enjoying good business. There have been no price changes in any paper department during the week despite the fact that there have been withdrawals of price lists by several paper manufacturers. These lists have not yet been replaced by new quotations and when they are it is not anticipated that there will be any drastic changes. It is possible that there may be a slight increase in a few lines in keeping with the general upward tendency but for the most part the mills are simply making a few adjustments in their lists, while at the same time intimating that there is not likely to be any price recession.

PULP.— From what can be learned the pulp market continues to show an easing off tendency. No large stocks are being sold by the manufacturers and the paper mills appear to be buying cautiously. Neither does it appear that the pulp mills have accumulated stocks of any great size. In buying cautiously the paper makers have in mind the possible further drop in pulp which some of the paper makers predict may come. Groundwood is selling around the $40 mark now and can be bought at slightly less than this figure while

bleached sulphite is generally quoted at around $90.00 and up, with unbleached sulphite at from $65.00 to $75.00, the former price being for news grade.

NEW YORK MARKETS

New York, June 30. (Special Correspondence.) — Developments of an important nature have been lacking in the paper markets this week. Business in paper of most kinds is of very seasonable character at present; there is a fairly steady demand of routine dimensions from various consuming quarters, but buyers are proceeding in a careful way and are seldom ordering other than supplies needed for direct use. The market is far from inactive, however. Paper mills, taken as a whole, are doubtless busier than they ordinarily are at this time of the year. Reports from the Middle West regarding mill operations in that part of the U. S. are especially encouraging, telling as they do of a large majority of plants running at a very satisfactory rate of capacity and of having a good volume of unfilled orders on file. Mills in the New England district are comparatively active though probably not as much so as those in the West.

Prices of paper rule steady. Practically no changes of any kind have been reported this week. Manufacturers unable to secure enough orders to absorb their full output are wisely curtailing production and maintaining prices — there are several reasons completely justifying this policy. Raw materials in the long run are but slightly cheaper today than they were several months ago; there has been some reaction in prices of rags, waste paper and similar materials, but pulp, chemicals, coal and other materials are just as high as at anytime this year thus far; labor also is costly and scarce, particularly unskilled labor, and the other costs of paper manufacturers in marketing their product are as high at present as ever before, so that there seems every justification for prevailing prices especially since current paper prices are, if anything, below a proportionate level of other manufactured commodities based on pre-war averages.

That activity in the print paper industry is going on at a consistently good rate is indicated by the Federal Trade Commission's report covering the month of May which shows a big increase in production of newsprint over the proceding month. Domestic production of total newsprint in May amounted to 138,868 net tons, compared with 116,719 net tons in April — a gain of more than 22,000 tons — and also comparing with 129,950 tons produced in May a year ago, 78,868 tons in May two years ago, 129,230 tons in May three years ago, and 105,819 tons four years ago.

Of the 138,868 net tons of total newsprint produced in May, 1923, 126,215 net tons were standard news, which output was more than 17,000 net tons in excess of the 107,023 net tons produced in April this year, and contrasted with 120,654 net tons of standard news produced in May last year, 73,181 tons in May, 1921; 119,906 tons in May, 1920, and 96,192 tons in May, 1919.

Production of total newsprint in the United States during the first five months of this year exceeded that of the same time of any year in the past with the lone exception of 1920 and was very close to a parity with the output in that year. Production of total newsprint from January to May, inclusive, this year was 626,944 net tons, against 562,912 tons in the corresponding period last year, 528,678 tons in 1921, 629,244 tons in 1920, 556,245 tons in 1919, and 527,626 tons in 1918.

Quotations on box board have evinced a firmer tone this week after having inclined downward for a time. Most manufacturers in the East have insisted on a price of $60 a ton on news board and at least $57.50 on plain chip f. o. b. New York, and some have quoted $60 on chip and proportionately higher on news. The time is drawing near when the usual buying movement in board starts, and indications are that board prices have touched bottom for a while,especially since raw material in the form of old paper scrap is exhibiting a stiffening price tendency following a steady decline of several months' duration. Current buying of board is spotty but in the aggregate the tonnage moving is fully up to normal for this season, if not a little better.

Book papers are quotably steady and manufacturers keep moderately busy though chiefly on contract business. Coarse papers are in routine demand at maintained prices, with wrappings leading the way as tissue paper is in less call. Fine papers are holding their own both in point of price and in point of volume of movement.

GROUND WOOD.— There is nothing better than a routine demand for ground wood to be reported. Consumers are buying mechanical pulp in a limited manner, seldom ordering other than in tonnage immediately and actually needed, and while there is a fairly good contract movement and considerable spot market activity, it is quite apparent that current production is in excess of the wants of consumers. However, this is the period when grinders endeavor to store up a supply of ground wood to tide them over the usual dry spell later in the summer and not much selling pressure is being exerted on the market. Producers are stocking any surplus pulp they are making and are maintaining quotations fairly firmly at about $35 a ton at grinding plants for prime spruce ground wood, freshly ground, for prompt shipment; prices, of course, depending in large measure on the distance between producing and consuming points and the freights involved. There are reports of purchases at below $35 and it is likely some pulp has been bought at the cheaper prices, but indications are the bulk of business transpiring is at a basis of at least $35 f. o. b. pulp mills.

CHEMICAL PULP.— Demand for chemical wood pulp continues slow. There is some spotty buying but papermakers with few exceptions are absorbing supplies in limited amounts and seem definitely opposed to ordering other than pulp for which they have immediate need. Moreover, a majority of paper mills appear to have their present requirements sufficiently well covered to permit them to remain out of the market as buyers excepting in an occasional way. Prices are quotably maintained and sentiment among those on the selling side of the trade is that higher market levels will be reached later in the year, but, on the other hand, as is usually the case under circumstances such as now exist, there are some importers and producers who are shading asked prices today to secure orders.

So far as is known, the strike in the pulp and paper mills of Norway continues. The only cable advices received in New York this week were to the effect that negotiations were under way seeking to settle the labor disturbance in the lumber industry of that country, which led to a sympathetic strike by the pulp and paper mill workers, but it is understood that the Norwegian mills are still closed.

Importations of chemical pulp into the United States are on the decline, according to the latest figures issued by the Government. In April, for example, imports of were almost 12,000 tons below the 82,078 tons imported in March, and more than 27,000 tons less than was imported in February, when a total of 97,589 tons was received.

RAGS.— The feature in papermaking rags is a little stiffening of prices on the low grades, particularly those consumed by felt paper mills. This seems to be important if for no other reason than that it denotes a turn in the market after a decline which was uninterrupted for a period of several months. Felt paper mills in the East have freely paid 1.10 cents a pound f. o. b. New York this week for No. 2 roofing stock, while last week they bought as low as one cent a pound, recording a rise of $2 per ton, No. 1 roofing stock is relatively stronger in price, owing to the scarcity of such rags, and mills are paying 1.30 to 1.35 cents a pound New York.

New cuttings are in slack demand. Writing paper manufacturers seem to be well supplied for the present and are merely nibbling as buyers, and they are frequently securing the rags wanted at price concessions. Similarly, old whites and blues are in limited call. Dealers are endeavoring to hold up quoted prices but at the same time they are mostly accepting orders at reductions from the rates asked. Prices on many grades of rags are on levels where dealers claim there is little profit in collecting and sorting them, and it is asserted that stocks are therefore decreasing instead of increasing in spite of the light movement to mills.

PAPER STOCK.— Prices of old paper have steadied to a pronounced degree. Thus far no actual advances have been noted but the decline seems to have been definitely checked, and the tendency of values in at least certain cases is upward. Low grades are particularly firm. Flat folded newspapers are bringing 80 cents a hundred pounds f. o. b. New York, and No. 1 mixed paper 70 cents, and in some instances dealers quote a little beyond these figures. Shavings are holding steady at close to 4.25 cents a pound New York for No. 1 hard white, and 3.25 cents for No. 1 soft white shavings, while old kraft paper is firmly quoted by New York dealers at a minimum of 2 cents for strictly No. 1 packing f. o. b. this city. Old book stock continues quiet and quotations generally range around 1.65 cents a pound for heavy No. 1 magazines, and 1.40 cents for mixed books. Manilas and ledgers are at about last reported price levels.

OLD ROPE AND BAGGING.— Demand for old rope from paper mills is still of limited scope with the chief buying agency almost entirely out of the market. No. 1 domestic manila rope is fetching between 5.75 and 6 cents a pound f. o. b. New York and the probabilities are some mills have succeeded in purchasing a little under these figures. Old bagging also is exceedingly quiet. Not many papermakers are buying, and No. 1 scrap burlap is readily available at 1.15 to 1.25 cents a pound at shipping points, and roofing bagging at 85 cents a hundred pounds.

The London, *Times* and *Daily Telegraph* (Viscount Burnham's paper), will be sold this week at 4 cents each. Twelve months ago the price was reduced to 3 cents. They say that newsprint is more than double the 1914 price.

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AND

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PULP MILL GROWTH AFFECTS LUMBER

The expansion of the pulp and paper industry is having a marked influence on the lumber trade. In Eastern Canada companies which formerly manufactured considerable quantities of lumber have either ceased to engage in that branch of trade or have reduced their output, because of the great demand for pulpwood. These concerns find it more to their interest to use the timber as pulpwood than to convert it into sawn lumber.

In the West, the rise of the pulp and paper industry is also affecting the lumber business. The Prince George Lumber Manufacturers' Association, which includes nearly all mills operating along the lines of the Grand Trunk Pacific, has petitioned the British Columbia Government to revise the pulp reserve areas recently established by that Government with a view of fostering the pulp and paper industry. The Associated states that it is not antagonistic to that industry, but the members contend that the lumber resources of the Prince George district are of sufficient extent to permit a considerable development of lumbering without jeopardizing the pulp branch if a proper revision is made of the pulp reserve areas. It is claimed that the lines of those areas encroach too much upon the timber which, in the economic management of the forest, should be left available for the mills. If these areas are maintained, it will mean that inside three or four years the lumber mills will be forced to close because of lack of commercially available lumber, or that the mills will have to be moved to other points.

CHIEF FORESTER COMPLAINS OF SETTLER'S APATHY

While there is much to be thankful for in the improvement with regard to forest fires because of recent rains, the situation will be serious for another three or four months. This is emphasized in the following bulletin concerning forest fires which was issued by Gustave Piche, Chief Forester for Quebec.

"As a result of the wave of heat going through the province in the last few days, and the strong winds which are reported everywhere, the fires have started over again in several sections, so that the situation is far from good and more losses are reported this afternoon. The fire fighters are still fighting without rest. All those employed by the Government or by the protective associations are working energetically to extinguish the fires, but, unfortunately, they are not always helped by those who should co-operate. A number of settlers, instead of trying to control small fires starting on their land, advised the forest rangers and do not give much help themselves. This is one of the reasons which prevents the control of fires from being effective in many instances. It may also be added that some of the limit holders take no interest whatever in protecting their limits, and are quite surprised when they are advised that part of their reserve has been burned down. It is very important to keep the people well aware that the conditions have not by any means improved, and everyone must help to save the forests."

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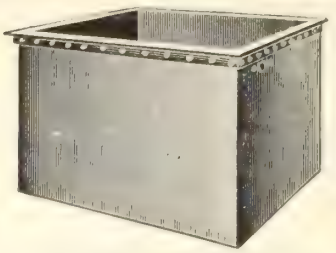
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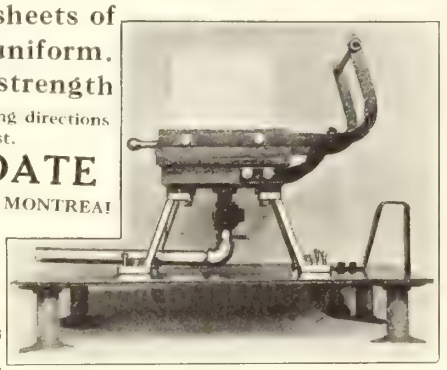
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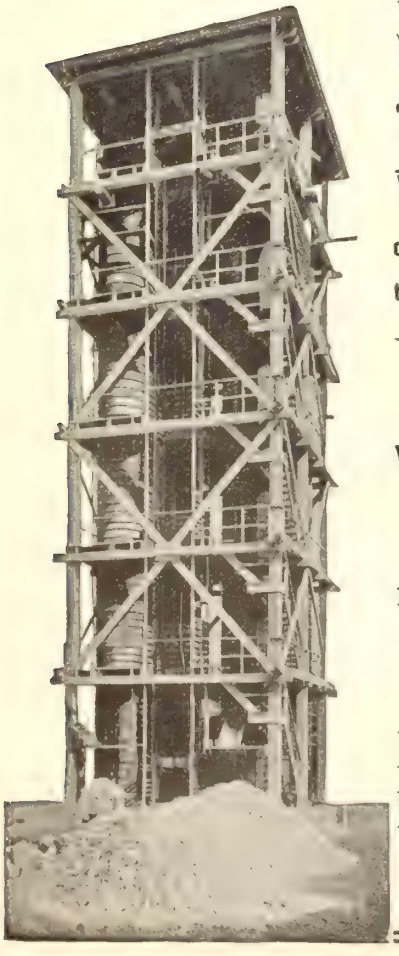
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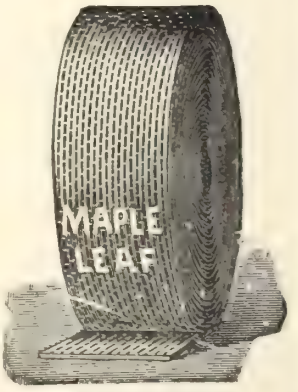
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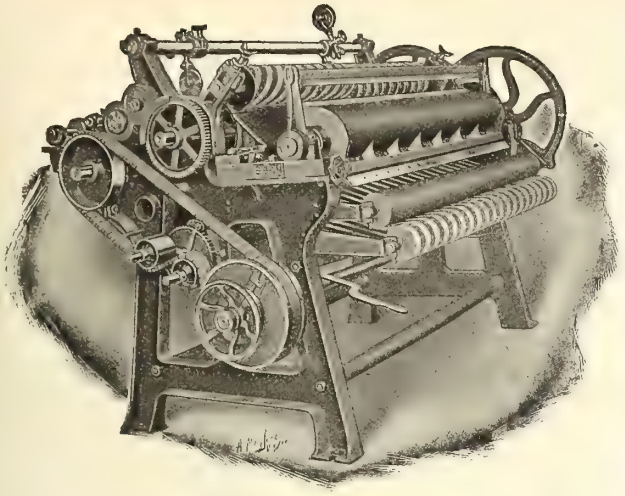


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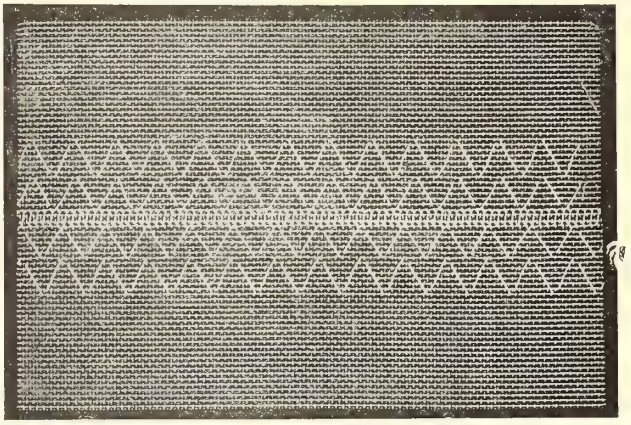
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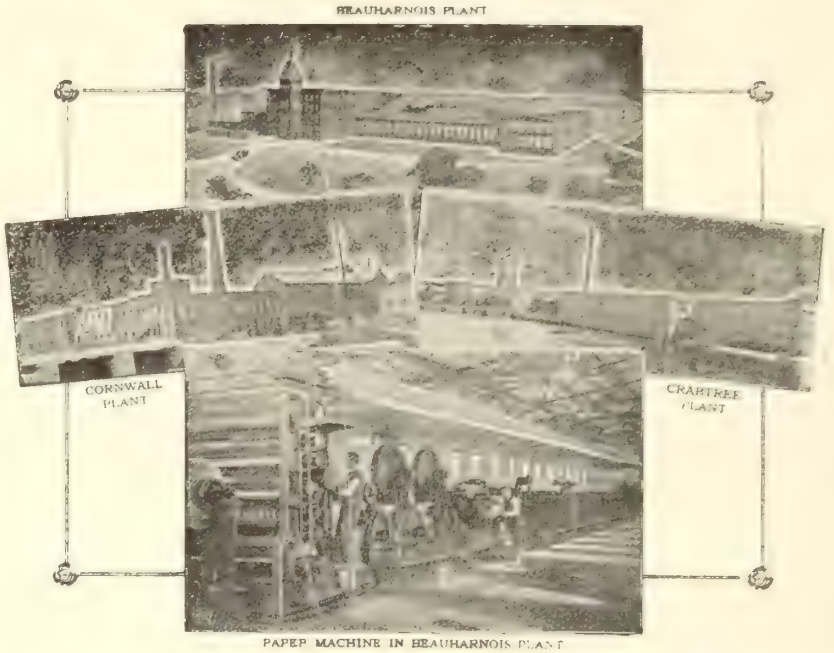
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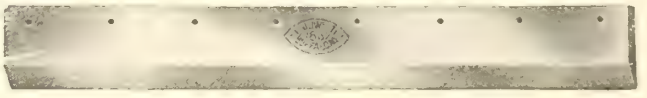
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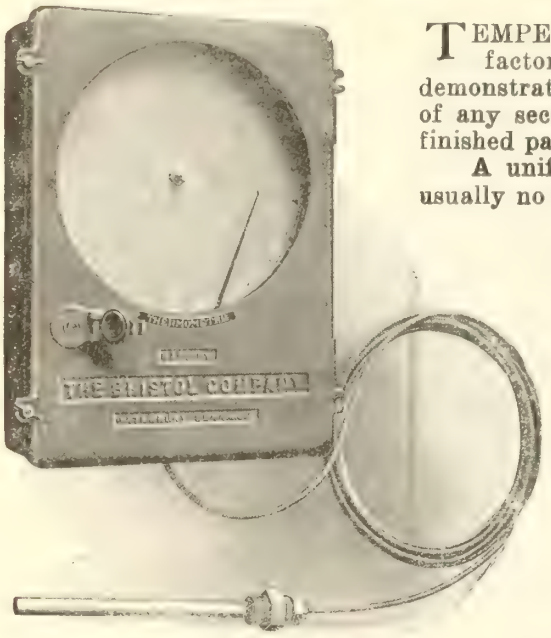
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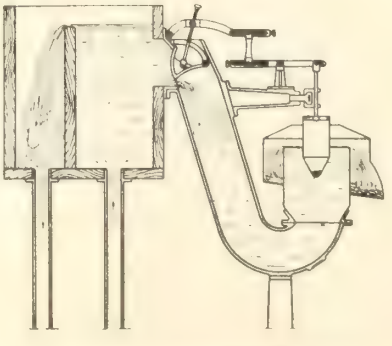
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MacKinnon Steel Co., Ltd.
Walsh Plate & Structural Works, Ltd.
White, W. H.

Penstocks, Wood Stave:
Canadian Pipe Company, Ltd.
Pacific Coast Pipe Co., Ltd.
White, W. H.

Pillow Blocks:
Canadian Fairbanks-Morse Co., Ltd.
Canadian Link-Belt Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Victoria Foundry Co., Ltd.
Waterous Engine Works Co., Ltd.

Pipe — Riveted:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.

Pipe — Wood Stave:
Canadian Pipe Company, Ltd.

Pipes — Brass & Copper:
Tallman Brass & Metal Co., Ltd.

Piping — High Pressure:
Canadian Fairbanks-Morse Co., Ltd.
Crane, Ltd.
McAvity & Sons, Ltd., T.
Northern Foundry & Machine Co.

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Canadian Fairbanks-Morse Co., Ltd.
Dodge Manufacturing Co.
Hydraulic Machinery Co., Ltd.

Plate and Tank Works:
Can. Des Moines Steel Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Dominion Engineering Works, Ltd.
Goldie & McCulloch Co., Ltd.
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Hendrick Manufacturing Co.
Horton Steel Works, Ltd.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Walsh Plate & Structural Works, Ltd
Waterous Engine Works Co., Ltd.

Plates — Calenders:
Norwood Engineering Co.

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Sturtevant, B. F. Co. of Canada, Ltd.

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Sherbrooke Machinery Co., Ltd.
Waterous Engine Works Co., Ltd.

Pneumatic Tools:
Canadian Ingersoll-Rand Co., Ltd.

Power Factor Correcting Devices:
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Power Condensers:
Griswold & Co.

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Canadian Ingersoll-Rand Co. Ltd.
Hydraulic Machinery Co., Ltd.
Northern Foundry & Machine Co.
Port Arthur Shipbuilding Co., Ltd.

Press Rolls:
Bertrams, Ltd.
Dominion Engineering Works, Ltd.
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Sherbrooke Machinery C., Ltd.
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Pressure Tanks:
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Pulleys:
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Canadian Fairbanks-Morse Co., Ltd.
Canadian Link-Belt Co., Ltd.
Dominion Engineering Works, Ltd.
Hamilton, William Co., Ltd.
Northern Foundry & Machine Co., Ltd
Port Arthur Shipbuilding Co., Ltd.
Victoria Foundry Co., Ltd.
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Pulp & Paper Mill Accessories, Ltd.
Smallwood Stone Co.
Smallwood-Low Stone Co.

Pulp Stone Burrs:
Can. Fairbanks-Morse Co., Ltd.

Pulp Thickeners:
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.
Sherbrooke Machinery Co., Ltd.

Pulp Wood:
Crittsinger, Burt C.

Pumps:
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Boving Hydraulic & Eng. Co., Ltd.
Can. Fairbanks-Morse Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Dominion Engineering Works, Ltd.
Downingtown Mfg. Co.
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Goold Shapley & Muir Co., Ltd.
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Peacock Bros., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Sherbrooke Machinery Co., Ltd.
Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co., Ltd.
Weir, Ltd., G. & J.

Pumps — Stock:
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Canadian Fairbanks-Morse Co., Ltd.
Goldie & McCulloch Co., Ltd.
Harland Engineering Co., Ltd.
McAvity, T. and Sons, Ltd.
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Gartshore, J. J.

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Recording Instruments:
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Bertrams, Ltd.
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Port Arthur Shipbuilding Co., Ltd.
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Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co., Ltd.

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Pickles, W. F.
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Canadian Fairbanks-Morse Co., Ltd.
Russel Brothers.

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Tallman Brass & Metal, Ltd.

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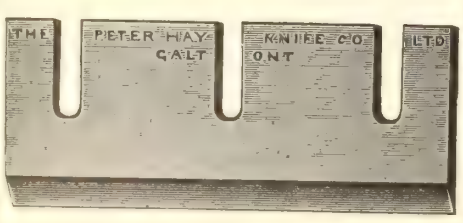
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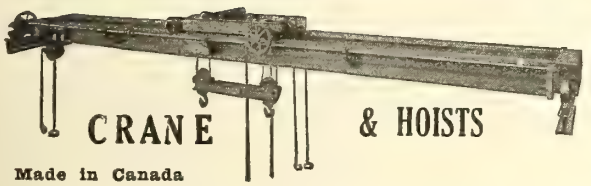
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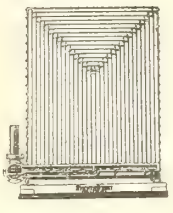
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ALPHABETICAL LIST OF ADVERTISERS

See Classified List on Page 73.

Unpaged advertisements appear in every other issue

A

Alberene Stone Co., Ltd. .. ..
Abitibi Power & Paper Co. Ltd. .. 84
Acer, J. A. H. & Co., Ltd. 74
American Voith Contact Co., Inc. ..
American Stone Co. 24
American Woodpulp Corporation .. 24
Ayers, Limited 11

B

Babcock & Wilcox 3
Barrett Co., Ltd., The .. ..
Barber, W. J. & Co., Ltd. 22
Bathurst Company, Ltd. 82
Bates & Innes, Ltd. 25
Bemis Manufacturing Association .. 30
Bertrams, Limited .. ..
Belgo Paper Co., Ltd., The 82
Beveridge Supply Co., Ltd. .. .. ..
Black-Clawson Co., The 86
Boivin, Louis .. ..
Bolton, John W. & Sons, Inc. 26
Boving, Hydraulic & Engineering .. Company, Ltd. .. ..
Bristol Co., The 80
Brompton Pulp & Paper Co., Ltd. .. 82
Burgess, E. T. .. ..

C

Canada Metal Co., Ltd. 21
Cameron Machine Co. 87
Canadian Combustion Co., Ltd. .. ..
Canadian Barker Co. .. ..
Canada Foundries & Forgings, Ltd. 72
Canadian Des Moines Steel Co., Ltd. 28
Canadian Elixman Co., Ltd. 19
Canadian Equipment Co., Ltd. .. ..
Canadian Fairbanks-Morse Co., Ltd. 32
Canadian Ingersoll-Rand Co., Ltd. . 10
Canadian Mead-Morrison Co., Ltd. ..
Canadian Milk Products, Ltd. .. .. ..
Canadian Johns-Manville Co., Ltd. . 6
Canadian Nashua Paper Co., Ltd. ..
Canadian Paperboard Co., Ltd. 24
Canadian Link- Belt Co., Ltd. .. ..
Canadian Robert Dollar Co., Ltd. ..
Canadian Pipe Co., Ltd. 30
Canadian Sirocco Co., Ltd. .. .. ..
Canadian SKF Co., Ltd. .. ..
Canadian Vegetable Parchment Co., Limited .. ..
Canadian Vickers, Ltd. 69
Canadian Westinghouse Co., Ltd. ..
Carey, Jas. L. 22
Capital Wire Cloth & Mfg. Co., Ltd. 26
Christie, George, Ltd. 80
City of Hull .. ..
Clayton, Neil & Jones, Ltd. 12
Combustion Engineering Corporation Limited 5
Crane, Ltd. .. ..
Crittsinger, Burt Co., Inc. 71
Cleveland Stone Co., The .. ..

D

Date, John 70
Deltcher Brothers .. ..
Dept. of Lands, Forests & Mines Ontario .. ..
Dodge Mfg. Co. of Canada, Ltd. ..
Dominion Belting Co. 70
Dominion Engineering Works, Ltd. 1
Dominion Oxygen Co., Ltd. 17
Donnacona Paper Co., Ltd., The .. 24
Don Valley Paper Co., Ltd. The 24
Downingtown Mfg. Co. 25
Dryden Paper Co., Ltd. 24
Dunlop Tire & Rubber .. ..
Dunham, C. A. Co. .. ..

E

Elixman Paper Core Co., Inc. .. ..
Elk Fire Brick Co. of Canada, Ltd.
English China Clays, Ltd. .. ..
Engineering & Machine Works of Canada, Ltd. 18

F

Ferguson, H. S. 22
Ford, J. & Co. 74
Foundation Co., Ltd. 22

G

Galt Knife Co., Ltd. .. ..
Garden City Paper Mills, Ltd. .. .. ..
Geigy Co., Inc. 70
Goldie & McCulloch Co., Ltd. .. .. ..
Goold Shapley & Muir Co., Ltd. .. 72
Gottesman, M. & Co 29
Graselli Chemical Co., Ltd., The ..
Graton & Knight Mfg. Co., Ltd. ..
Griswold & Co. .. ..
Gutta Percha & Rubber, Ltd. 16

H

Hamblet Machine Co. 71
Hamilton, Wm. Co. of Canada, Ltd. 89
Hamilton Gear & Machine Co. 87
Hans Renold of Canada, Ltd. .. .. ..
Hardy, George F. 22
Harland Engineering Co. of Canada, Limited .. ..
Hay Knife Co., Ltd., Peter 86
Hendrick Mfg. Co. .. ..
Hercules Powder Co. .. ..
Holliday, L. B. & Co., Ltd. .. ..
Huestis, A. M. .. ..
Hydraulic Machinery Co., Ltd. 4

I

Ideal Patents Corporation 20
Industrial Engineering Co., Ltd. .. 72
International Business Machines Co., Limited. 23
International Pulp Stone Co., The 27
Interlake Tissue Mills Co., Ltd. ..

J

Jenkins Brothers, Ltd. .. ..
Jenssen Co., G. D. 23
Johnson Wire Works, Ltd., The .. 30
Jones & Glassco, Regd. .. ..

K

Kalbfleisch Corporation, The .. .. ..
Kander Paper Stock Co., Ltd., The 24
Kenwood Mills, Ltd. 13
Kimball, Herbert S. 22
Kingsbury Machine Works .. ..
Klipstein & Co., Ltd. A. .. ..

L

Lacey, James D. & Co. 21
Lagerloef Trading Co. 67
Langston, Samuel M. Co. 27
Laurentide Co., Ltd. 84
Lawrence Machine Co. .. ..
Lombard & Co. Inc. 27

M

Management Engineering & Development Co., The 23
Mead, Patton & Co., Ltd. .. ..
McArthur, Irwin, Ltd. 72
McAvity, T. & Co., Ltd. .. ..
McKinnon Steel Co., Ltd. 22
Mills Works & Machinery, Ltd. .. 80
Miramichi Quarry Co., Ltd., The .. 28
Montabone, J. A. F. .. ..
Montreal Locomotive Works, Ltd. . 19
Morrison, J. L. Co., The 78

N

National Paper Stock Co., The 24
Niagara Wire Weaving Co., Ltd. The .. 74
Northern Crane Works, Ltd. 87
Northern Electric Co., Ltd. .. ..
Northern Foundry & Machine Co. .. 12
Norwood Engineering Co. of Canada, Limited 26

O

Oliver Continuous Filter Co. 7
Ontario Forestry Branch .. ..
Ontario Wind Engine & Pump Co., Limited .. ..

P

Pacific Coast Pipe Co., Ltd. 70
Patton, Mead & Co., Inc. .. ..
Peacock Brothers, Ltd. 21
Penmans Limited 20
Port Arthur Shipbuilding Co., Ltd. 29
Porritts & Spencer Co., Ltd. 74
Price Bros. & Co., Ltd. .. ..
Price & Pierce, Ltd. 82
Provincial Paper Mills, Ltd. 76
Pusey & Jones Co., The .. ..
Pulp & Paper Mill Accessories, Ltd. 85
Pulp & Paper Trading Co., Ltd. .. 71

Q

Quarries, C. & M. Co. 72

R

Reed, Geo. W. & Co., Ltd. .. ..
Relph, Darwen & Pearce 86
Rolland Paper Co., Ltd. .. ..
Ross Engineering of Canada Ltd. .. 27
Russell Brothers 26

S

Sadler & Haworth 2
Sewall, Jas. W. 22
Sherbrooke Machinery Co. 8-9
Smallwood Stone Co., The 24
Smallwood Low Stone Co., Ltd. .. 27
Smith Howard Paper Mills, Ltd. .. 78
Spanish River Pulp & Paper Mills, Limited 86
Steel Trough & Machine Co., Ltd. 70
Stinson-Reeb Builders' Supply Co., Limited 27
Stebbins Engineering & Mfg. Co. .. 23
St. Maurice Paper Co., Ltd. 74
Sturtevant Co., of Canada, Ltd. 87
Swenson Evaporator Co. 87

T

Tallman, Brass & Metal, Ltd. .. .. ..
Taylor, J. A. .. ..
Taylor, H. S., Ltd. 23
Texas Gulf Sulphur Co. 32
Ticonderoga Machine Works .. .. ..
Tippett & Co., Ltd. .. ..
Tyler, W. S. Co., The 27
Trimbey Machine Works 19

U

Underfeed Stoker Co. of Canada, Ltd.
Union Screen Plate Co. of Canada, Limited 87
Union Sulphur Co., The 30
United Wire Works, Ltd. 71

V

Vera Chemical Co. of Canada 87
Voorhees Rubber Mfg. Co. of Canada, Limited 23

W

Wallace, John H. W. & Co., Ltd. .. 23
Wardlaw, T. D. & Son 72
Walmsley, Charles & Co. Ltd. 14-15
Warren, Kenneth L. 22
Warwick Woollen Mills, Ltd. 28
Watford Engineering Works, Ltd. ..
Waterous Engine Works 90
Wayagamack Pulp and Paper Co., Limited .. ..
Weir, G. & J. (Canada), Ltd. 21
Westbye, P. P. .. ..
White, W. H. 22
Whyte, William 23
Wilson Patterson Co. 70
Wood Pulp Trading Co., Ltd. 68

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Bonded for 20 and 10 Years



The Wearing Surface— Essential to Right Roof Construction

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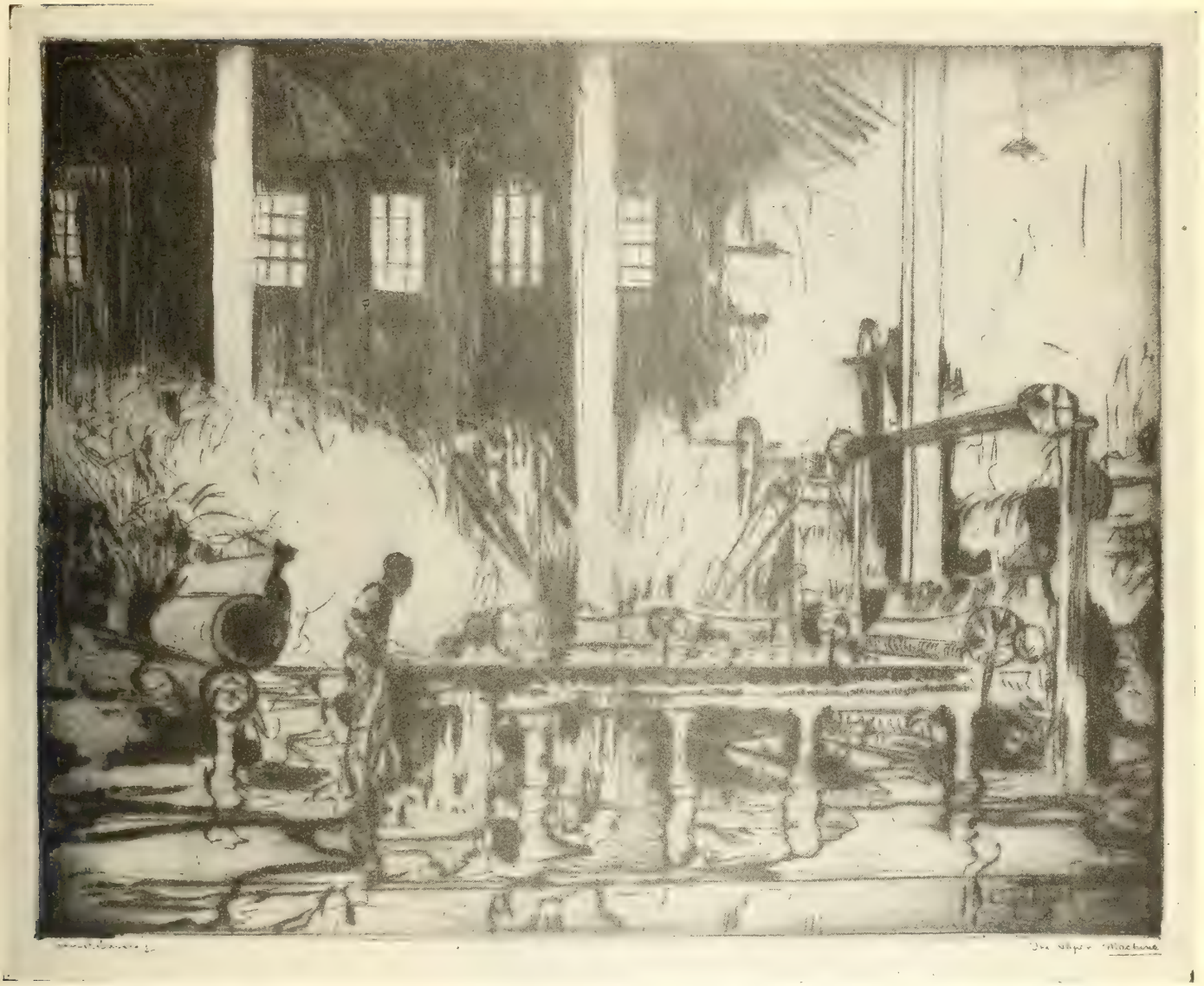
3. This wearing surface protects against surface wear—defies the scuffing of heavily shod workmen. The firmly imbedded gravel or slag is proof against erosion or washing away.

Barrett Specification Roofs are bonded against roof repair expense—Type "AA" for 20 years, Type "A" for 10 years.

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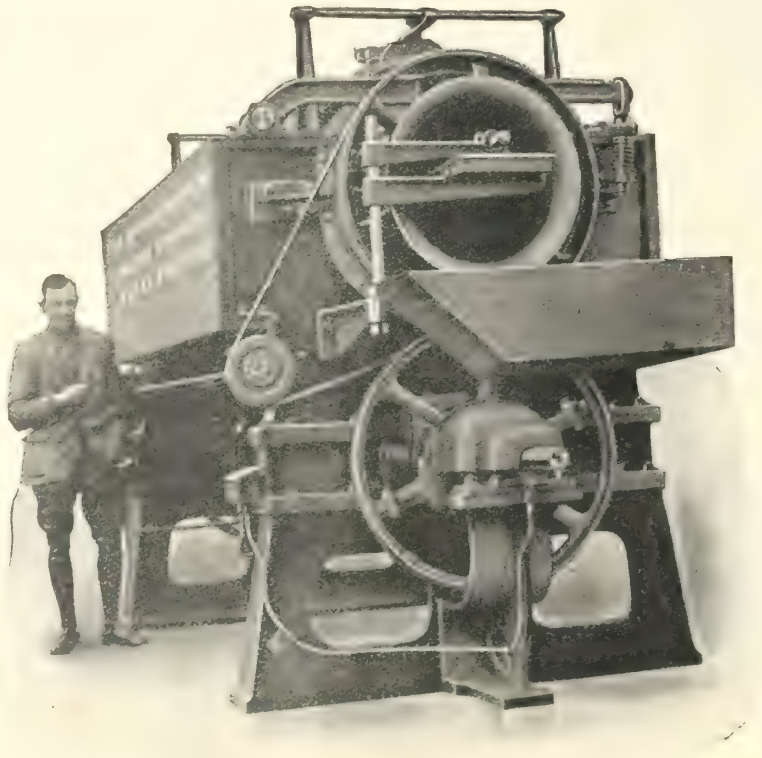
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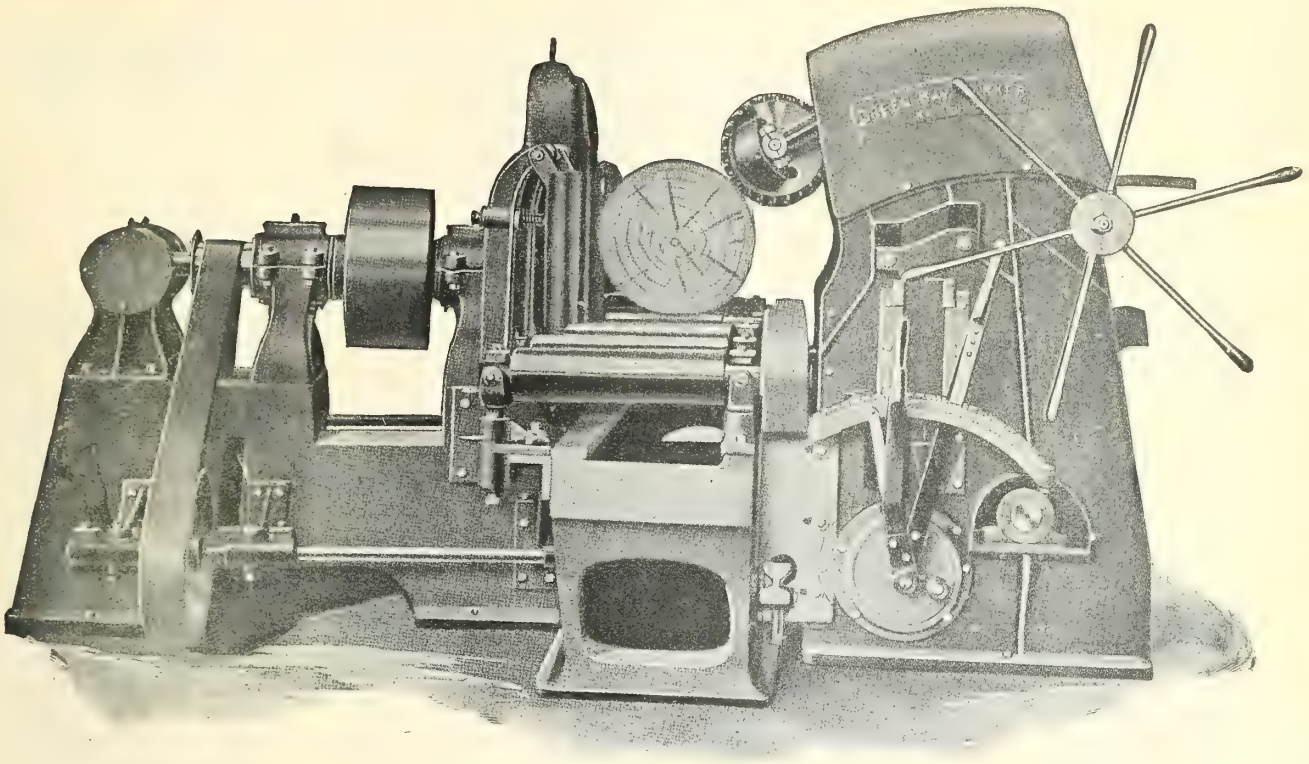
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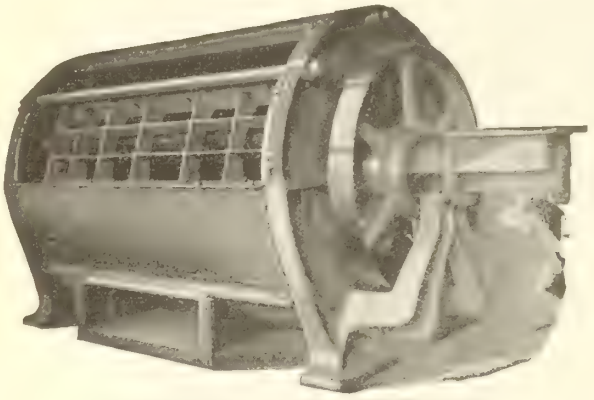
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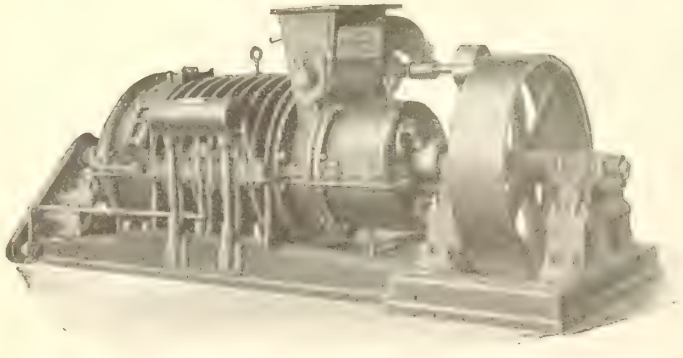


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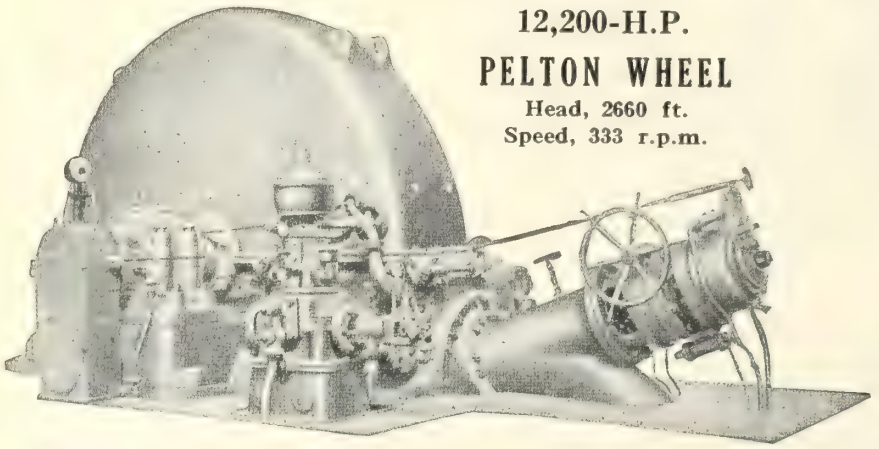
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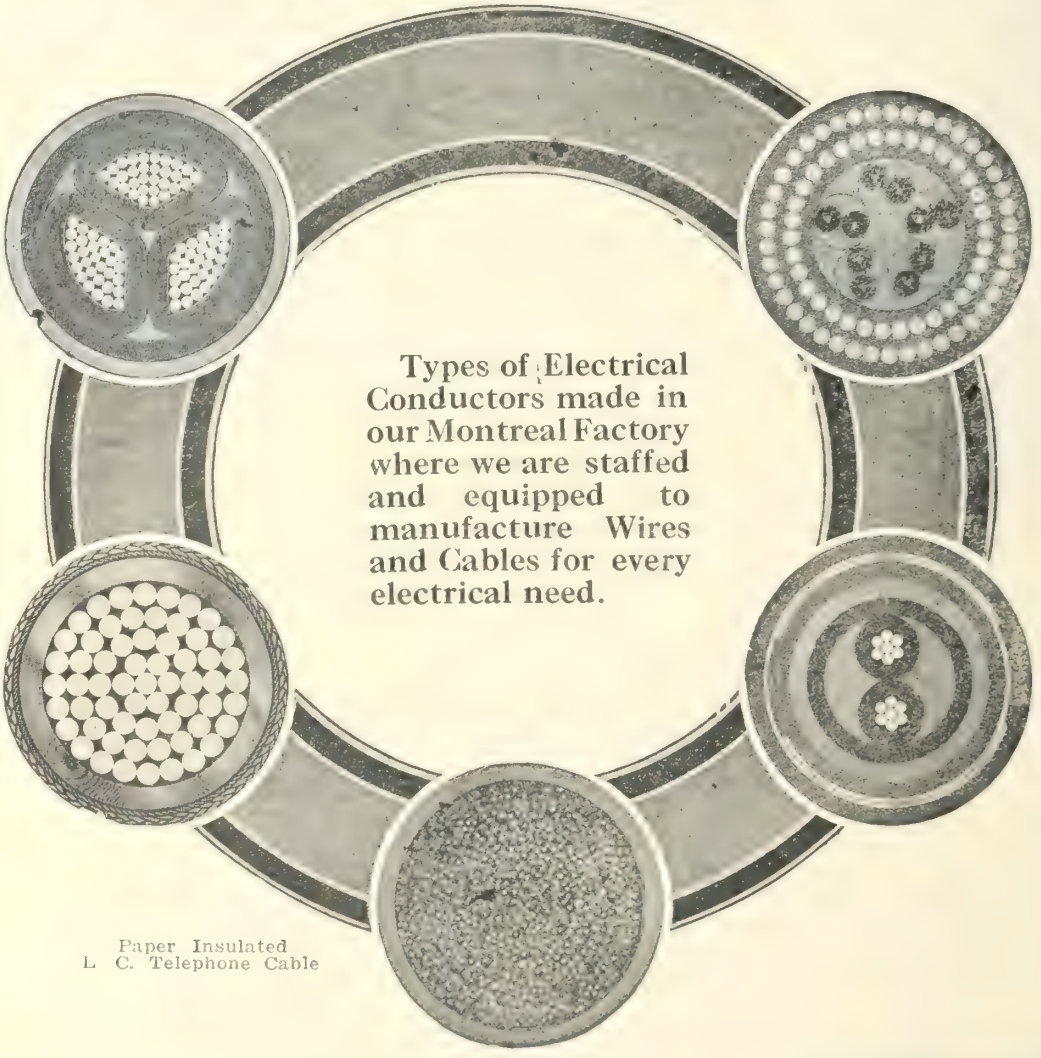
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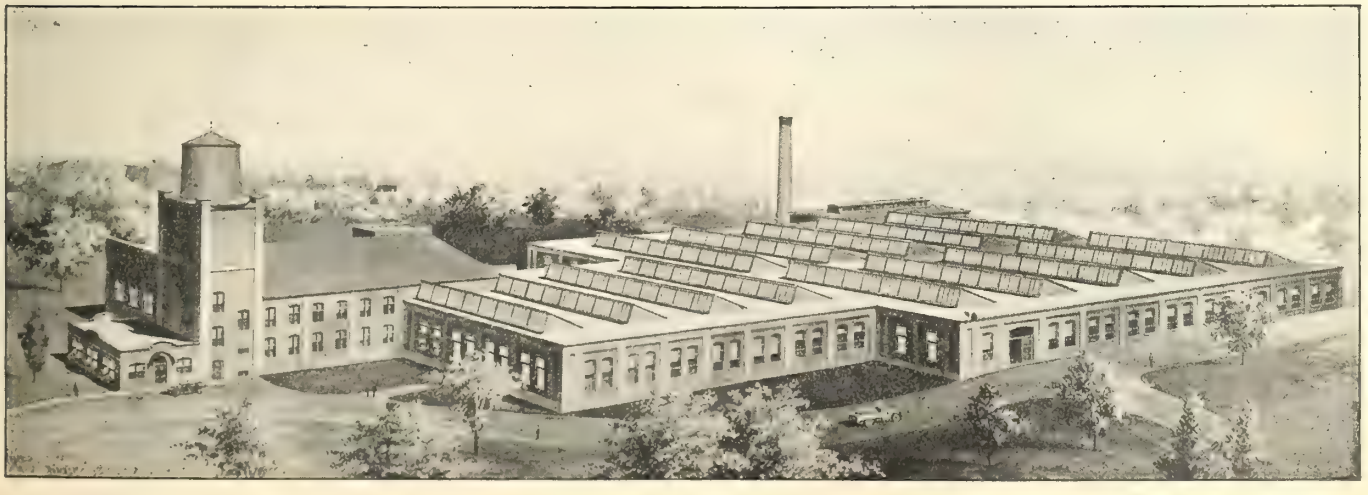
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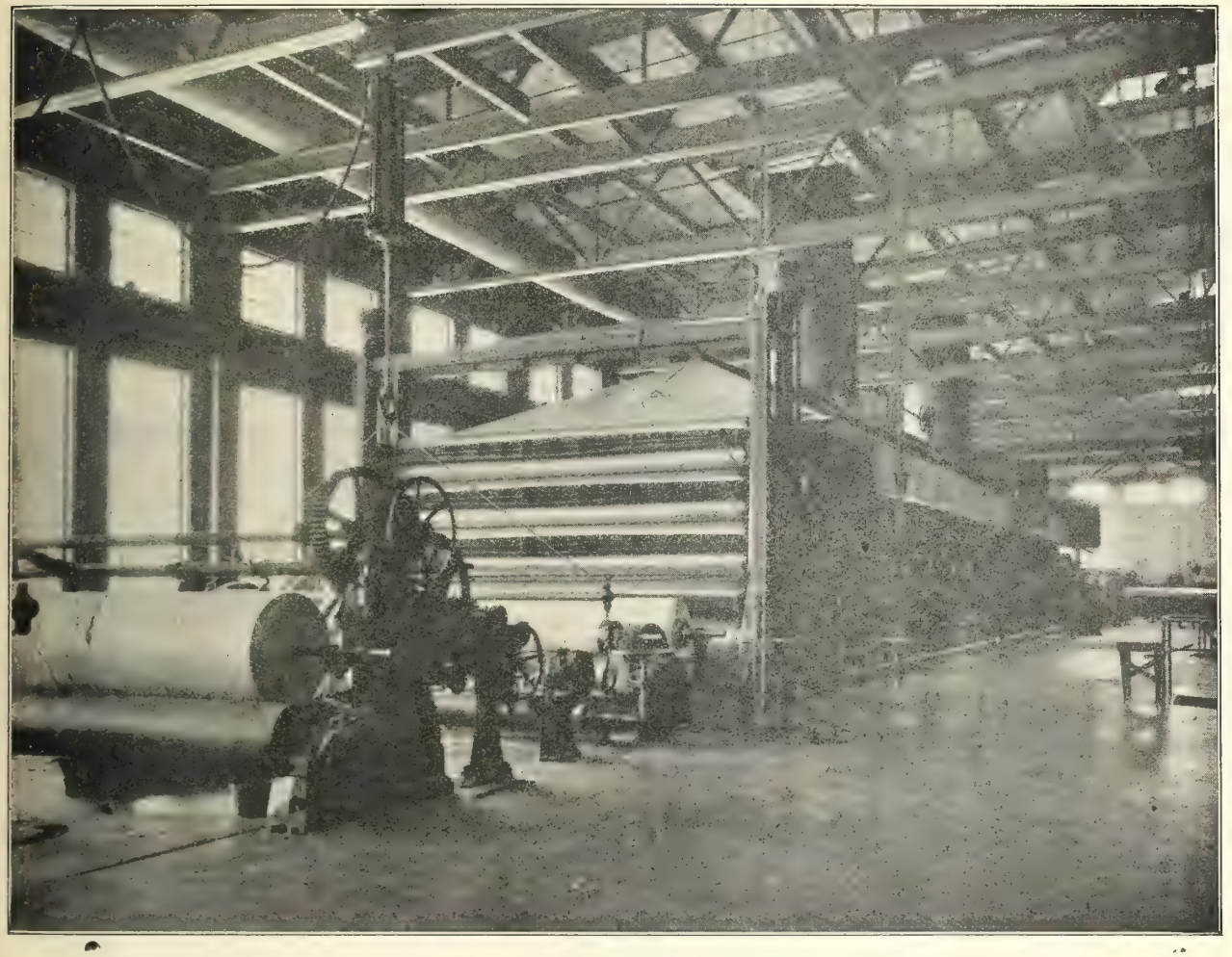
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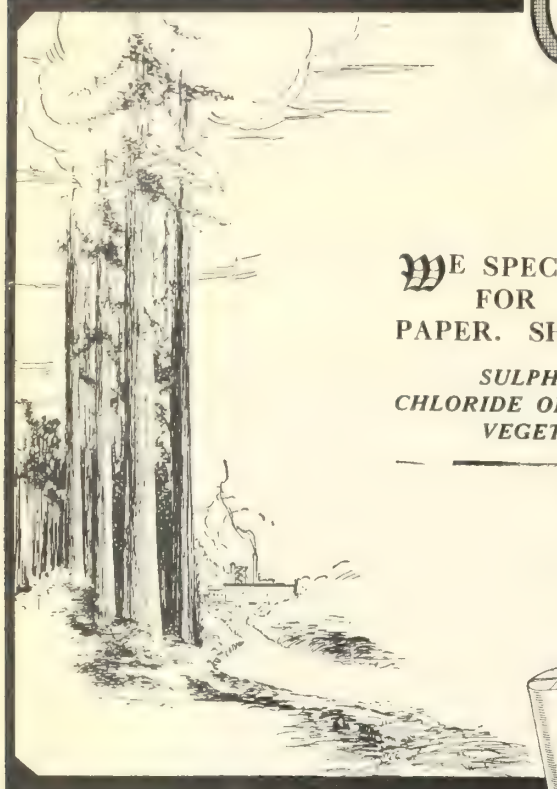
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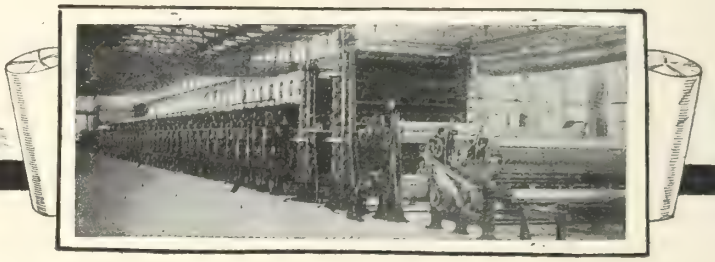
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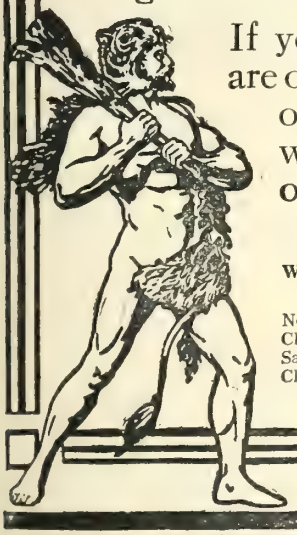
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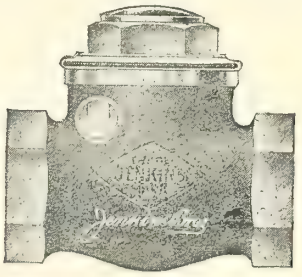
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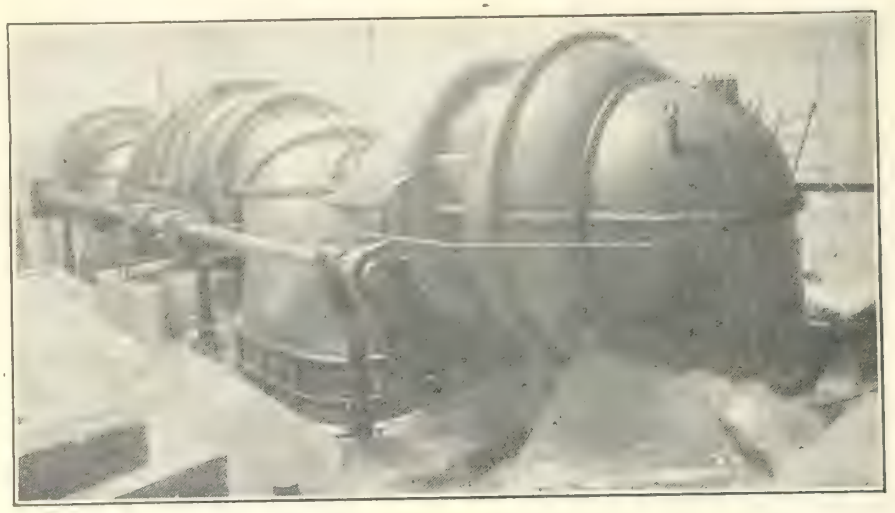
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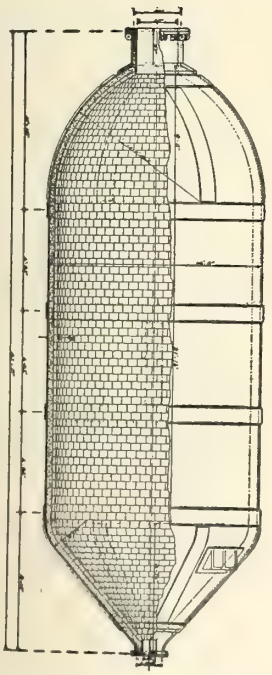
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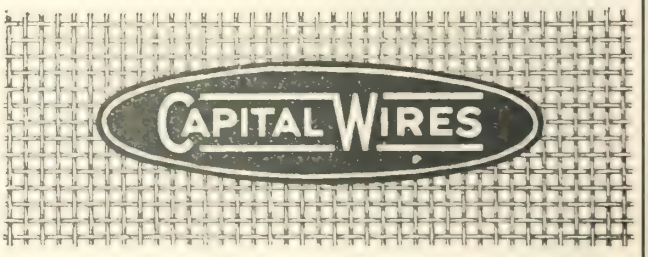
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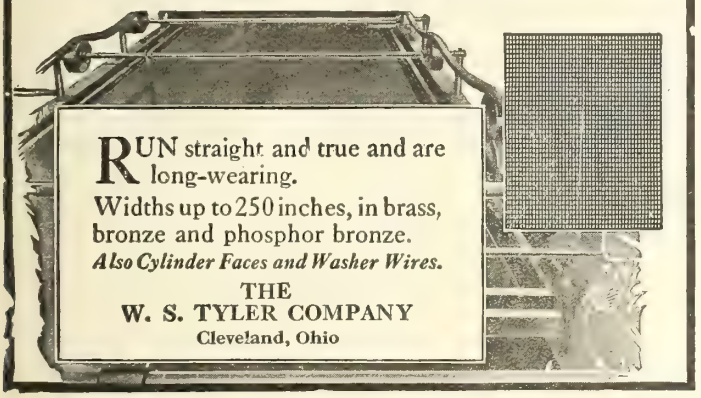
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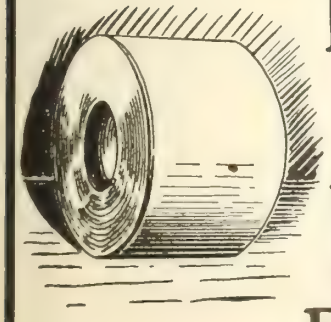
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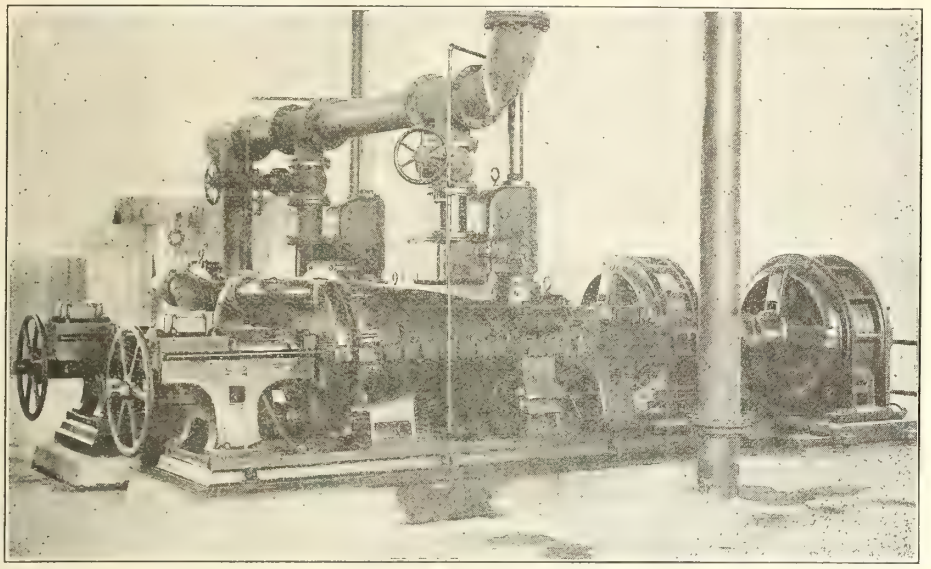
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VOL. XXI. GARDENVALE, QUE., JULY 12th., 1923 No. 28

TABLE OF CONTENTS

Editorial:

Depending On Mines 687
Empire Statesmen In Conference 688

Paper Box Manufacturers' Convention:

Opening Address 689
Report Of Secretary 690
"Competitors, Yet Partners, In The Industry" . . 691
Stimulating The Demand For The Paper Package 693
Sanity And Poise In Competition 695
Bonus And Incentive Systems 696
Training To Make Quality Boxes 700
Reducing The Cost Of Accidents 701
Those In Attendance 702

Special Articles:

Steel Belts And Their Application To The Solution Of The Conveying System 703
Waterglass As Adhesive For Paperboard 705

Miscellaneous Information:

Paper Horseshoes In Germany 688
What Is Your Life Worth? 704
The Foreman's Duties 708
New Ontario Industry 716

News Of The Industry:

Ten Years Of The Mellon Institute 707
Business Holding Up 707
Hammermill Paper Co. Establishes Fellowship . . 708
Newsprint Production In May 708
Pulp And Paper News 709
U .S. Paper Men On Canada's Pulp Bar 716
Development Scheme In Lake St. John District . . 710
United States Notes 712

Institute Item:

What Must I Do To Make Good? 711

The Markets:

Canadian Trade Conditions 713
New York Markets 714

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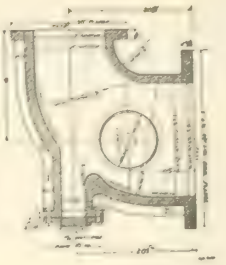
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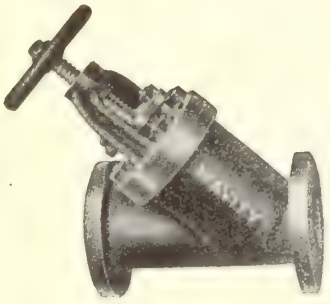
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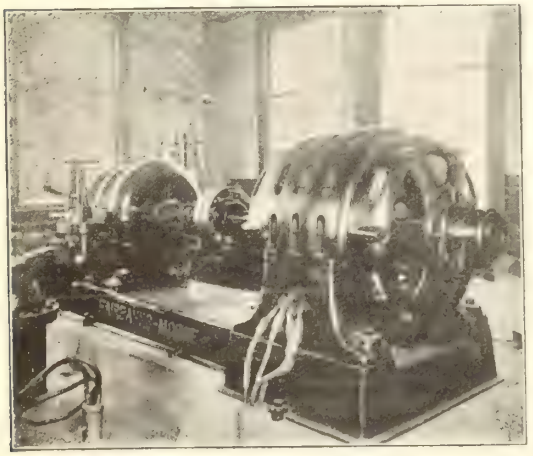
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:-: EDITORIAL :-:

DEPENDING ON MINES

Our text for a little editorial comment is found in the following item with the above title which appeared last week in the "Toronto Globe." As this may represent the attitude of a number of people, it is possible that an entirely incorrect impression of Canada's resources will be spread abroad. The item reads as follows:

A reader who styles himself exceedingly hopeful for the mining output in Northern Ontario, and without prejudice in a certain controversial situation, points out that those who maintain that Northern Ontario is not likely to be an important source of coal forget that a certain school of geology used to say that the great pre-Cambrian shield south of Hudson Bay would not be a source for gold or silver. Those critics now have their answer in the enormous production of the Porcupine, Cobalt, Kirkland Lake, Sudbury and other camps. Even now a very small percentage of this great area has even been prospected. It was pointed out that President C. V. Corless, in his address to the Canadian Institute of Mining and Metallurgy in 1922, said that few people realized that not more than 15 per cent. of the entire surface of Canada is suitable for profitable cultivation as farm land. Hence the necessity for prosecuting the search for minerals in the most aggressive manner.

It is evident that the writer of this item picked out a stray sentence somewhere and applied it to the general report on the geological condition of the north country, overlooking the fact that the pre-Cambrian area was thus evidently confused with occasional patches of Laurentian formation, which are known to be generally barren of valuable minerals. As a matter of fact, the earlier reports of the geological surveys were wonderfully complete and did serve to indicate the possibilities of ore bearing districts that have since been developed into enormously valuable properties that have contributed in great measure to the prosperity of this Dominion. The fact someone's suggestion of the improbability of the discovery of valuable minerals on account of the presence of the granite gneiss of the Laurentian formation was followed by very important discoveries in the true pre-Cambrian formation is certainly no excuse or reason for the silly intimation that one might expect to find coal in these same areas.

The author of this item also incompletely quotes Dr. Corless with regard to his notable statement as to the vast extent of mineral areas underlying Canada's surface. Even a casual study of the map of the Dominion will confirm the statement of Dr. Corless that approximately 15 per cent of Canada's area is primarily adaptable for agricultural purposes. This, however, by no means should leave the impression that the other 85 per cent. of Canada's area is solely and unalterably suitable for mining developments, and not suitable for the cultivation of other crops supported by the soil above the underlying mineral wealth. A mine has no objections to extending its veins under a lake or the ocean, nor to having a forest or a farm flourish above its storehouse of metal.

The fact of the matter is that there are wonderfully rich valleys and basins where the soil is particularly adapted to agricultural development and should form the basis of a prosperous farming community that would furnish the mining community with its needs of vegetables, grain and fruit, as well as dairy products. The vast remaining area, however, of the ground overlying the mineral deposit of the Dominion is primarily and to a large extent solely suitable to the growth of trees, and there is no reason on earth why the development of the mines and the forests should not go on hand in hand to the enrichment of our Dominion and the prosperity of our people. Many of the problems of the prospector and miner are shared by the lumberman and pulp manufacturer. The prosperity of one industry is reflected in the purchasing power of the other, and both contribute to the welfare of the general public, as the needs of the miner and the lumberman must naturally be provided by the manufacturer of machinery, clothing, etc., and the merchant and transportation industry. By all means let the mineral wealth of Canada be discovered, but by no means let the Government nor the people forget that everybody cannot work in the mines; timber is needed for houses, paper is needed for our everyday uses, and agricultural development is necessary to furnish us with food. It would be incorrect to say that anyone of these national activities is more important than another, because they are all interdependent. It is absolutely necessary, however, that in order to maintain our national prosperity, we must protect the forests and replace those that we are cutting down and burning up, with new ones for use in the near future. The great question and problem is whether we have sufficient standing timber now to keep our industries going until the replaced and replanted areas will come to maturity.

EMPIRE STATESMEN IN CONFERENCE

The Imperial Conference has been called for the 1st October next in London, and the Imperial Economic Conference will meet there at the same time. The need for personal touch and consultation between the heads of the various self-governing Dominions and the representatives of India has recently been growing more urgent. Questions have emerged during the past few months which, perhaps, can only be satisfactorily settled at a Conference of the Empire's statesmen. For example, the signature of the recent treaty with the United States by Canada's own representative alone and not in association with a representative of Great Britain has been regarded, whether rightly or otherwise, as opening up constitutional issues of some magnitude, as to which different interpretations obtain in different parts of the Empire. The forthcoming Conference should do something to clear the air on this as on some other matters.

There are other constitutional problems looming up on the horizon, and it is possible that, in their case also, the forthcoming Conference may make a substantial contribution to their solution. But we confess that, for our part, we regard the questions that must come before the Economic Conference as being second in importance to none. As a result of the war, Great Britain is confronted by an industrial, commercial and financial situation of a far from reassuring kind. In order to obtain the wherewithal to discharge her debt obligations to the United States and also to keep her present population so employed as to support them on a reasonable standard of living, it is imperative for her — to a degree that it has never been before — to find an outlet for her manufactured products. Where is she to find this outlet? That is a question that must come before the forthcoming Economic Conference in a vitally urgent form. For with it is interwoven the question of Great Britain's commercial future and even of her political future as the source and centre of the Empire. For the latter is, and must necessarily be, dependent on the former and on her ability to support her population.

It must be remembered that, of Great Britain's export trade just prior to the war, something like two fifths went to European countries, and of this Germany absorbed about a quarter. Revival of her trade with Germany is unattainable until the reparations question is settled. Indeed, revival of her European trade at large, on any scale commensurate with her necessities, is almost out of the question until foreign budgets are balanced and foreign currencies stabilized. It is obvious that, as things are at present, Russia must be disregarded from the standpoint of British trade, while, in any case, Germany is more advantageously situated than Great Britain for profiting by any trade openings that may offer in that country. Outside Europe Japan is both increasing her exports to China at the expense of Great Britain and also taking a leading part in the development of Chinese natural resources. On this continent, the United States tariff must serve increasingly to exclude from the markets of that country even such manufactured products as Great Britain can still produce in competition with American industry. As far as Central and South America are concerned, the United States is now largely in possession of that market as a result of the war which shut off British exports therefrom.

This being so, Great Britain must look for her markets within the Empire. Most of her raw materials and foodstuffs can be supplied within that Empire's wide bounds, and, in view of her war debt to the United States and that country's tariff barrier against exports from other lands, it is to her undoubted interest to draw her supplies from the British Dominions. In India and in Africa, in particular, there are great potentialities for British trade. And, as regards the other British Dominions, while, it is true, each, possessed, as it is, of complete tariff autonomy, is naturally striving to develop its own manufacturing industries, yet each also is under the necessity of importing products from outside its borders. In such circumstances, it should not be beyond the competency of Empire statesmanship to devise some well-considered plan whereby inter-Imperial trade may be fostered and developed. So far as Canada is concerned, apart from any high Imperial grounds, there is every reason why we should restrict our purchases from other countries and buy instead from Great Britain — a customer that buys so much from us in the present and is sure to buy increasingly from us in the future.

It is because the subject of closer Empire trade is bound to be canvassed at the forthcoming Economic Conference with unprecedented concentration that we attach such importance to the meeting of that body next October. The objective at which we should aim is for every Empire citizen to purchase Empire-made goods. The manner of attaining that objective need not be discussed here and now. But the urgency of Great Britain's economic situation will doubtless be made fully apparent at the deliberations next October.

PAPER HORSESHOES IN GERMANY

Horseshoes of paper have been produced in Germany. The paper is treated with oil of turpentine, which makes it tough, strong and waterproof.

The sheets are pasted together with a special preparation, then the shoes are cut out in proper form, subjected to enormous pressure, trimmed and shaped with files.

It is asserted that the paper horseshoe offers a better resistance to wear than one of iron.

Paper Box Makers Optimistic

The paper box industry was under review at an enthusiastic convention of the Canadian Paper Box Manufacturers' Association at the Hotel Clifton, Niagara Falls, Ont., June 25-26, the gathering being the eighth annual reunion of the members of the organization. Paper box makers from most parts of Canada gathered and in a two-day session listened to many papers on subjects of interest to the trade and formulated plans in various departments of the industry for the coming year. There was a general tone of optimism to the proceedings which indicated wide faith in the future of an industry that has developed greatly in Canada during the past few years and the discussions at the various sessions indicated a feeling of close co-operation among the manufacturers and with their kinsfolk, the paper and board manufacturers. The President, C. Winter Brown, of New Brunswick, struck an optimistic note in his annual address when he intimated that the slogan "Advance" had been lived up to and would continue to inspire the industry during the coming year. He intimated that with a good crop this year Canada's already improving business outlook would reach still more satisfactory proportions by the Fall. A similar optimistic view was taken by the new president, J. B. Lawrason, of Lawrason & Doughty, Toronto, who takes the helm this year under good auspices. Mr. Lawrason is one of the most popular men in the trade and his faith in the future of the industry is indicated by the fact that his firm are about to move into a new factory they have recently erected in Toronto. The Vice-President is George Hancock, of the Galt Paper Box Company, while the following will compose the directorate for the coming year: Bart Sproule, Toronto; J. L. Constantineau, Montreal; L. J. Adjutor Amyot, Quebec; C. Winter Brown, Coldbrook, N.B. Ottawa was selected as the next place of meeting, to be held on the first two days of the last week in June, 1924.

The much discussed Sales Tax of the Dominion Government came in for some attention when a resolution was adopted authorizing the secretary to write the Minister of Finance suggesting that it be legally compulsory that the final source which pays the tax to the Government, charge the whole of such tax to the consumer, as a separate charge on the invoice, and that it be legally compulsory for such customer to pay the whole of said charge.

The result of considerable research and work by F. W. Fisher, of Toronto, along the line of accident prevention, was shown in the recommendations in his report that a number of safe-guards which he specified be adopted. The Ontario Government will be asked to bring these into compulsory force in an effort to afford every possible means of protection to the workers in the box making factories. Mr. Fisher's report strongly recommended the equipment of every platen press with the device recently invented by Robert Goldie, of the Rudd Paper Box Company, Toronto.

At the request of David F. Robertson, of the Canadian Paper Board Company, Limited, a committee was appointed to meet the board mills at an early date in respect to classification of board and weight according to the number of points. The following compose the committee selected:

H. D. McDermid, Somerville Paper Boxes, Ltd., London, Ont.; E. Newell or O. A. Hutchison, Dominion Envelop and Cartons, Limited, Toronto; R. S. Dunlop, Dominion Paper Box Co., Ltd., Toronto and J. L. Constantineau, King Paper Box Company, Montreal.

James Northey, of the Telfer Paper Box Company, Limited, Toronto, and A. L. Lewis, of the Southam Press, addressed the gathering on the subject of the "Marking Act", and Mr. Northey was appointed the Association's representative to act in conjunction with the Toronto Typothetae on the subject.

According to the secretary's report the total number of active members on the roll is 44 as against 45 at the time of last years' convention, with 42 associate members. Although board, in which the paper box manufacturer is so vitally interested, had within the past twelve months advanced very considerably in price and remains firm, said the secretary, yet taking commodities as a whole in Canada, prices have remained about staple during the year.

Among the papers read and addresses delivered were the following: "Competitors, Yet Partners," by Charles V. Syrett, Victoria Paper and Twine Company, Limited, Toronto; "Stimulating the demand for the Paper Package", by L. P. Morrison, of the Automatic Paper Box Co., Toronto; "Reducing the Cost of Accidents", by F. W. Fisher, of F. W. Fisher Co., Ltd., Toronto; "Training to Make Quality Boxes", by George O. Slingerland of Mechanicsville, N.Y.; Director of National Paper Box Manufacturers' Association of the United States; "Competition in Montreal," by J. L. Constantineau of Montreal; "The Outlook for Canada", by Canon Cody of Toronto; "Sanity and Poise in Competition", by D. H. McDermid of the Somerville Paper Boxes, Limited, London; paper on and demonstration of "A Man's Shoe Box," by F. R. McGrew, of Ernst & Ernst.

OPENING ADDRESS

By Mr. C. WINTER BROWN, Coldbrook, N.B., President Canadian Paper Box Manufacturers' Association

It is a great pleasure to have the honor of presiding over this your eighth convention and having the privilege of welcoming our large and steadily growing associate membership. There are yet a number of Paper Box manufacturers that are not in our ranks, which we should endeavor to enroll so that they might share with us the benefits of the Association.

Reviewing the past, I well remember our organizing meeting in Toronto where we were brought together by our efficient Secretary, Mr. Frame, and our first president, Mr. McDermid. We realized from this time onward what convention really meant — a gathering of Paper Box manufacturers, who have made from year to year a continuous advance, helping not only themselves, but their customers as well. How could we help living up to our slogan "Advance" with such able men as Messrs. Harries, Bennett, Reid, Moisan, for our leaders?

Through our meetings we have become better acquainted with the ways and methods of the Board Mills, who sell us our principal raw material, and who have worked with us for our mutual benefit.

We are just now profiting by the Marking Act, where goods manufactured in foreign countries have to be marked where they are manufactured. This is something that our Association took up this year in earnest and they have succeeded in having same retained on the statute books, otherwise it would probably have been repealed.

On looking over the programme for today and tomorrow, we have papers on various subjects. Such papers have been given to us at past conventions and have greatly benefited us in our business, so I hope that as in the past we shall try to put into practice many of the new suggestions that will be thrown out by the speakers.

Those of us who are not in the Toronto Carton Club feel that we have been benefited also by their papers, which have been copied and passed on to us from time to time.

You will all, I believe, agree with me that it has been a help to our industry to have been organized during the war and since its close we have come through the trade depression with practically no failures in our industry.

Every year brings with it problems to be discussed. Costs seem to be ever in the foreground these days. Costs are continually changing. The war has brought with it the new war tax, which has to be reckoned in with our cost of production. We have now the tax of 6 per cent. instead of the tax of 4½ per cent. and 2¼ per cent to deal with, and I hope that the speaker on this important subject will have something to say along this line. I understand that the Government Officials are expecting to have their troubles finding out how the new law will really work out.

For everybody's hour I trust every member has something to bring up. Your problems are those of the other members and you may be able to get some help or enlightenment on your particular subject. In any case let this hour be filled up with profitable discussions.

You have no doubt read with some concern of the large numbers of our young people, who have been leaving this country to cross the border to the neighboring Republic, I might say they have been leaving the Maritime Provinces in very large numbers. In fact, it looks like a calamity to see the flower of our population leaving one of the most beautiful sections of Canada to make their homes in the United States. What is the reason? May it not be to some extent the high freight rates now prevailing? Many of our industries have had their production cut down on account of lost markets. This heavy loss of population still makes it harder for our industries which depend on local trade for their products.

I mentioned a moment ago that we as an industry have come through the trade depression of the last couple of years with practically no failures, which shows or proves to my mind at least, that we as a whole have been watching our costs, and knowing same, have not been selling our product at less than cost as we have more or less been guilty of in the past. Again I say, thanks to this Association for its educational efforts along this line.

We are giving our time and money to attend this Convention and I trust we shall go back to our offices with new inspirations and many thoughts that can be put into practice for the benefit of all.

Not only has our coming together been beneficial from a business standpoint, but from a social one as well. During the past Conventions we have made lifelong friends among both the active and associate members and their families. Had it not been for our Saguenay trip we might not now have our friend Morency in our ranks.

We are meeting today in one of the world's famous beauty spots and those of us who visited this place after the Hamilton Convention were so delighted with accommodations it afforded, resolved to lend our support toward meeting here at some future time and at last we have had our hopes realized. We trust our associate members will see to it that the ladies of our party visit the cave of the Winds before they leave Niagara Falls.

It is very gratifying to see by the trade reports that there is a general revival of business throughout the country and with a good crop this year, business should greatly improve in the fall.

REPORT OF SECRETARY

By Mr. S. J. Frame, Toronto

I would report that the total number of active members on the roll at present is 44 as aganist 45 at the time of the Convention a year ago. The total number of associate members at present is 42 as against 43 at the time of the Convention a year ago.

The Association accounts for the year ending May 31st, 1922, have been duly audited by Mr. W. P. Bennett, the Honorary Auditor. In the year ending May 31st, 1923, inclusive of $726.14 balance carried over from the previous year, the total receipts were $3,430.72 and the total disbursements were $1,962.26 leaving a balance on hand of $1,468.46 as of May 31st, 1923.

Since we last met a year ago, the world trade movements, apart from Central Europe, have in the main, even to some extent in Russia, been in the direction of improvement. Great Britain being dependent on world trade perhaps best reflects the improvement, for while there is still a great amount of unemployment there, yet it has become greatly reduced and the marks of improvement while gradual, are sure.

In the North American continent in which we are more directly interested, the improvement in demand has operated to a greater degree in the United States than in any other country in the world, and which has resulted in Canada losing a certain amount of workers to the United States. This though is only a repetition of a phase which has happened before in Canadian development and will run its course. It is not improbable but that, as has happened in previous years, later on the shifting of workers will become reversed in a northward instead of a southward direction.

World trade is seriously affected by the present European conditions, the yet unsolved problem of reparations having a very unsettling effect on European trade conditions. However, the problem of reparations will eventually be solved, and then improvement in Europe will follow with consequent good results to the rest of the world.

Speaking of Canadian trade conditions, although board, in which the paper box manufacturer is so

vitally interested, has within the last twelve months, advanced very considerably in price, and remains firm, yet taking commodities as a whole, prices have remained about stable during the past twelve months.

Looking back over the past two and a half years and taking specially into consideration the great strain which all passed through in the year 1921, Canada has a great deal to be thankful for. While, during the past nine months or thereabouts, trade has not been as active in Canada as in the United States, and business with the retail trade on which the paper box industry is largely dependent has been retarded by the long winter and spring, yet without going to any extremes we have plodded steadily along and while a bit quiet, trade is in a healthy condition. Also, apart from the fact of prices on farm commodities being out of alignment with prices generally, fundamentally conditions in Canada are sound. In this connection, I quote as follows from Babson's report of April 24th last.

"Better Outlook for Canada"

"Many of our Canadian clients have asked if business in the Dominion will show the same improvement as in the United States. In years past Canada usually has followed the same trend as the United States, with a lag of about six to nine months. The question now, however, is whether the revival in the United States is not very largely induced by the new tariff rates, a factor which of course does not benefit Canada. To an extent this undoubtedly is true. Nevertheless, we believe that clients in Canada can safely plan on considerably better business by the latter half of this year.

"A study of the failure figures below shows that during the past six months Canadian business has been undergoing a thorough house cleaning. Commodity prices have not yet been deflated quite as much as in the United States, but the levels between the two countries may easily be adjusted within the next few months. The general trend of Canadian stock prices is upward. Hence, although the total volume of business as shown by Bank Clearings is still low, the other barometer subjects suggest that a turn for the better is not far away.

The Association, during the past year has, as usual, operated for the benefit of the industry, and thanks are due to the directors and members of committees for the willing and unselfish way in which they have worked together in the Association's behalf.

Although the past two or three years have brought about conditions approaching normality, yet the fact remains that throughout the world competition is of such severity as to call for the cultivation of efficiency of the highest standard from all houses who expect to survive.

Therefore, the foundation stones upon which the programme of this Convention has been built, "Knowledge of costs", "Wisdom in selling prices", "Stimulating the demand for the paper package" are most appropriate and the discussion arising from the subjects at the Convention pertinent to the said three phases of the business should be most helpful to all attending the Convention.

In conclusion, in the faith that Providence will again this year bless us with good crops, the Canadian Paper Box industry can look forward to the future with serene confidence.

"COMPETITORS, YET PARTNERS, IN THE INDUSTRY"

By Mr. CHARLES V. SYRETT, of Victoria Paper & Twine Co., Limited, Toronto

Really, I do not know why a subject so large and so intense as "Competitors, yet Partners, in the Industry", should have fallen to my lot. I shall not commence to make any apologies, but nevertheless I appreciate the honor done me and will do my best to do justice to the subject and not to weary you. If in parts my address border on Idealism it is because I find it difficult completely to abstain from bringing out some points that must of necessity be substantially based on sound Ideals and if it were not so my address could hardly be of an helpful nature but I must confess to you that it is far easier to be idealistic by word of mouth than by human action.

First let me say that each and all of you are to be complimented upon the progress of your Association. In just a few years you have made great headway and steadily grown to a successful organization. An association, after all, is only what you make it and those who remain outside your ranks, speaking more particularly of your active membership, miss more in the progress and educational advance of the industry than they can possibly conceive of, plus the pleasure and profit of meeting their partners, in the same industry.

The subject your Committee has asked me to speak on is very broad and has many angles. The greatest difficulty is to avoid following too closely along any particular line as time does not permit of too lengthy an address.

We all have competitors, some we claim are easy competitors, some we may dislike because they have never warmed up to us, some we dislike because we dislike their methods of doing business, perhaps some have never recognized us, perhaps we ourselves have kept aloof too, but the real fellow in our trade is the chap you love to talk with, to visit with, to exchange ideas with, to help improve conditions with, he at least, is the real competitor with Service his motto coupled with vision. This one hundred per cent exchange of genuine goodfellowship does not come because one thinks he is brighter than the other but comes from the heart and in the moulding of that heart there is a place for humanity, a place you have developed and are still developing to take in a still larger part of humanity including your competitor who has already become a partner in the same industry with you.

Some competitors, always remain plain and undisguised competitors, never partners in the same industry, this indeed is their loss and this class of competitor we should free our minds of, excepting the possession on our part, of a willingness to toe the line. Conscience directs and directs wisely and we know quite well whether we have done our part or not.

Two words describe best what I mean; two words battered to death, misconstrued and misused, used by perverters of the truth and yet two words in the English language so essential to good business. Co-operation and Service. Working conjointly with our competitor for better conditions and serving truly with a vision for the future.

Co-operation denoting unselfishness, to be useful

to and considerate of others; Service to serve truly our fellowman.

How can we overlook or avoid using these words that mean so much? Have we not seen the lack of Co-operation and Service to others in our younger and earlier days of business life?

The suspicion, the independent spirit, the exaggerated idea of our own importance, the utter lack of thought for others, how these things governed our younger days of business life. Then gradually as the days and years went rolling by, we mixed more with our fellow-man and gradually began to see the benefits to be derived by the exchanging of ideas and with this more complete knowledge of our competitor we became more mellow, more helpful, more charitable in our expressions and acts and felt much better in our innermost heart for all these changes which helped to bring about better understanding.

Sometimes it is a long, long uphill climb to create and build along sound and helpful lines an Association that is to be long-lived. The first cost in effort, patience and even in expense may appear to be fruitless, tiresome and even bordering on despair but with enthusiasm and work, a sincere desire to work conjointly with our competitors in the Association, with a steady eye on the goal of "Effectual Co-Operation" the desired peak of success can be reached with all its attainments and benefits.

Then again, after this high watermark is reached in our association life we are able to look back and see how short-sighted we were, how we allowed foolish and trivial things to really hold us back from enjoying the friendship and confidence of our competitors in the same industry, and we regret to think of all the time we lost by not vigorously and enthusiastically joining hands with our competing rivals. Rudyard Kipling in his famous poem entitled "IF" says:—

If you can walk with crowds and keep your nerve.
Or walk with Kings nor lose the common touch,
If neither foes nor loving hearts can hurt you
If all men count with you but not too much,
If you can fill the unforgiving minute
With sixty seconds worth of distance run,
Yours is the Earth and all that's in it,
And what is more, you'll Be a Man, My Son.

The whole poem is an inspiration and one never tires reading it.

We should have faith in humanity, but not too much, we must not expect perfection because we were not made perfect. If we err in thinking we're perfect we are treading dangerous ground and we cannot have as much faith in our fellow man because we would be placing ourselves on a higher plane which would be disastrous. We all have weaknesses but we can build, we can progress, we can serve with a real vision and when we take advantage of all the opportunities around and about us we are truly serving and building, gaining more from life than we would from a shortsighted belief that we are better or superior to the other fellow.

Some may argue, some may think that a free interchange of ideas, be they Manufacturing — Selling — or Administrative tend to destroy or weaken the **Individuality of the Man**. This I believe to be a misconception. An odd Goliath in business may spring up but seldom is he so perfect, so efficient, that he knows "all things well" pertaining to the industry he may be engaged in; he can but learn some things from his so called competitor and I venture the opinion that in an Association such as you possess, this self same Goliath can learn a whole lot. So also, if he does possess great strength in his own business with wonderful understanding and wisdom, knowing through his wisdom, that financial gain is not the supreme end of this life, can he not give to his weaker partners, in the industry, some of that knowledge that is so vital to success. Is he not manifoldly repaid? I think he is.

Individuality to which I have referred should not be allowed to be absorbed. It should be strengthened. It should be brought out and extended. A unity of helpful principles together with initiative will increase tremendously the "Individuality of the Man."

This is the day of large transactions, large mergers and amalgamations. It's in the air. Even the Presbyterians and the Methodists have the idea. Some mergers come about as the result of inefficient management, others because of ruinous conditions force a getting together to control market prices. Then there is the lonely man, working alone, cannot or does not want to learn, desires not to exchange useful and vital information concerning operations. The day comes, his business is gobbled up and right here is where I often think that if the manufacturer, the wholesaler recognized more fully the need for working closer together with his partner in the industry how much better would general business be and the tendency toward mergers and monopolies become lessened, rather than made greater.

Prosperity is not always a blessing and those who do prosper must always be on their guard against becoming too set in their ways, too autocratic, forgetful of the earlier years of hard work and close application which if unheeded is apt to bring disaster. We are all in business to make money. We are in business to make a clean reputation. If we do not make money we cannot stay in business very long. The progressive man must be a money-maker to be a real business success. The business-man craves for increased business. This can be satiated by fair means, by energy throughout our factories from the lowest to the highest and we must know that Canada's natural growth should bring about healthy increases in the Paper Box Industry as well as most other industries.

The individual, whatever his vocation in the commercial sphere, whether manufacturer or wholesaler, salesman or executive, must be inspired and soundly possessed with a deep rooted desire to be sincere in all things, a conviction that must ring true at all times. He must be an accurate man. He must be proud of his position in industry, ready and willing at all times to protect his own reputation and character and that of his fellowman when wrongly attacked. He should be a practical man in his line and not an idealist in name only. We all seek to be leaders in industry. Leaders of some kind or other.

We work and strive to build businesses, to have large and successful institutions. How do we achieve this end? Is it by being under a delusion that individual advancement is made by crushing others down? Is it by belittling our competitors? Is it by sharp practice? No it is by dint of hard work and a desire to serve, to be efficient, to produce goods of quality and to market the same at a fair price with a reasonable profit. To be able to shake our competitor's hand and have him feel that there is no wall between us.

The old school of suspicion and bigotry is in a state of decay and gradually passing into the oblivion. The alert man of business of this age sees the absolute need for co-operation, of learning, of comparisons of facts and figures of costs and production, of rubbing shoulders with his competitors and knows that by this method of human interpretation to business, he is increasing in strength and knowledge and becoming a better and more substantial business man. We think we are living in a fast age; perhaps we are. Our tendency is to crowd too much business into our lives that crowds out too much pleasure. We often hear of the so-called slow methods of the Britisher as a manufacturer as against this side of the water. Yet we find British integrity and a Briton's word respected in all parts of the Globe. Thoroughness is exemplified in manufacture, character behind dealings and quality goods and we find British manufacturers are noted for playing the game one with the other, working closely together in most branches of industry.

Some time ago I read the principles upon which your Association was founded, very aptly and sensibly described by your most efficient Secretary-Treasurer. These principles are not mere words but words with a live meaning and if carried out in a serious and intense manner will mean a still stronger Association.

I very much doubt if perfection will ever come in Association life while we poor mortals live but nevertheless that does not mean that we should allow our efforts to wane. We must not lose ground. No matter what the annoyances we must go on. Knowing the true meaning of Association life, partners in the same industry, we know of the benefits attained, why let them become bedraggled and diminished because some may not agree with us?

Those opposed have little or no basis for argument against one manufacturer discussing freely with his kindred manufacturer important details for the betterment of the industry. Those in favor have every argument for a continuous and permanent interchange of knowledge one with the other. This must win even in view that in some rare cases there may be some who lack sincerity desiring to receive only and give nothing in return.

In conclusion I would like to say: — To those of you who serve and serve unselfishly, toil on, do not be discouraged, the principle of service cannot but be of profit to you in some way or another and in exemplifying the spirit of service you are unknowingly leading others down the broad pathway to a keener desire to be of service to those around and about them even to their Partners in Industry.

Gentlemen: — I close with this, an inspiration for the times through which we have been passing, a Poem composed by Grantland Rice, entitled "The Fellows Who Stick."

Yes, it's a Fight—
But on by the Shadows and out through the Night,
Taking the Break of the Game as it cracks,
Head up and ready for counter attacks,
Soaking up sorrow and pain as we go,
Crashing through trouble and heartache and woe,
Knowing that Fate, through the length of its span,
Never has beaten a good Fighting Man;
Knowing raw luck, with it's scurviest trick,
Never has won from the fellows who stick
So, head up and ready, and on with the play.
Though we must stumble o'er graves in the way.

Yes, it's a Scrap—
But the fighters are ready to fill up each gap,
Knowing that like has emerged from the gleam
Of softness and slumber that leads to a Dream,
Heads up, and ready to travel the road,
However, weary the burdensome load,
Heads up, and ready for whatever's due.
Pulling together and seeing it through,
Playing the game to the end of the row,
Set for the scrimmage with blow against blow,
Trouble's the Trainer that reaches the top—
Raw Nerve's the Reaper that harvests the crop.

STIMULATING THE DEMAND FOR THE PAPER PACKAGE

By Mr. L. P. MORRISON of Automatic Paper Box Company, Toronto

For once I honestly question the wisdom of our officers of this association in alloting to me so important a subject as "Stimulating the demand for paper packages". When I first received the letter from our good Secretary and considered the importance and size of this subject, for no one will a moment doubt that the very future life of our industry depends wholly on the existing demands, my answer was certainly "No". Before I was able to make this answer final, I received a phone message from Mr. Frame, and with his knowledge of my ability said that surely in two months' time you could think or read up something which would be of interest to the members. It was with this incentive that I reluctantly bowed to the inevitable and here I am. I must admit, however, that playing golf, fishing, or even cutting grass would be more pleasant.

In handling this subject I have divided it into four parts, — Past demand for Boxes, Present demand, What we hope for the future, and How to best realize those hopes.

As for the first part namely "Past demand for Boxes" I will not attempt to take you back to the early memory of some of our members of the so-called pioneer days when boxes were principally made by hand. When an order for 10 M looked like a mountain and an order amounting to $500 gave the thrill of a million dollar proposition. Let me just take you back 12 or 13 years and what do we find? From a solid box viewpoint, perhaps not such a vast difference as compared to folding boxes, but I honestly think if we had figures of sales in those years and compared them with sales today, it would greatly surprise and give food for thought to the most pessimistic member. From that time on we had the usual growth which we could naturally expect in a comparatively young country. Then the great war arrived, and the buying public blessed with more money than they ever hoped to possess demanded something better and better. The manufacturers packed more and more of their products in boxes. The demand increased, old plants bought new and better equipment, new plants sprang into existence and in spite of capacity of more than double what existed some few years previous, the demands for our products appeared so great that we were

still unable to properly satisfy. In those dream days we as supposedly business men, again built our childish castles and failed to think of, or purposely avoided the future. The optimism on which we fairly lived forced us to believe that that ever increasing demand would never cease. We were however, at that time educating the manufacturer to the importance of packing their products properly which meant more and better boxes, and also the buying public to the idea of buying their requirements in packages. This education brought about by general business conditions rather than any credit on the part of our members, if properly handled looks like our most effective weapon for the future.

Thus we arrived at the present time, and what do we find? Great and most efficient plants due to the decreased demand in all lines of material, ready to supply requirements almost 40 per cent. greater than those existing. Naturally we ask ourselves have manufacturers changed their method of packing? Have the general public in their crying demand for cheaper living forced the manufacturers to discard the paper package? Has the disgruntled individual who is ever ready to pick out this or that industry and picture it before the world as a useless expense, a luxury, the real reason without a question of the depreciated buying power of a dollar in a word the curse of the times in which we live, taken a throttle hold on our industry? Have these remarks had their effect? No doubt you hear daily remarks such as "Oh! how foolish people are today, my mother, my grandmother, and even my great grandmother bought everything wrapped in paper. Why should we, with no doubt added expense, buy our requirements in a paper box? Why do we support firms who put five cents worth of material in a five cent box and sell it to us for fifteen cents? Why are merchants so indolent that they prefer to hand us out twenty-five cents worth of this or that in a paper package in place of weighing up say one pound in a paper bag for fifteen cents?" These remarks may appear foolish but they are nevertheless true as everyone here knows only too well.

We now arrive at our hopes for the future. We all hope, and I think hope with every assurance of realization that our industry is interwoven so closely with the general business structure of this country that without it nothing could prosper and perhaps not even survive. We hope that manufacturers will realize the importance of not packing their products in a package, but will be ever ready to better the quality of that package. We hope that manufacturers will with the aid of the wonderful machines at their disposal today see that it is more economical to pack their goods in a carton than the old method previously used. That they will fully understand the immense advertising value of that package and instead of spending millions every year in the old time advertising campaign, seventy-five percent of which to my way of thinking fell on barren ground, they will divert a portion of it to the package which we think will if properly handled give them one hundred percent return.

As for the buying public, we hope they will see that they can buy as cheaply in a package as in bulk. That the quality of any product in a package with the name of the manufacturer clearly printed on same must of necessity be of the highest quality. That goods in that sealed package are unadulterated in a word just as it left the manufacturer. That that package with net weight on same assures them of full value and last, but not least, that they fully realize the sanitary quality of the packed product. This in our age when millions are spent yearly in every city, town and village to better the living conditions with the thought in mind that one healthy citizen is better than twenty delicate ones. We hope that the proper packing of food products at least will receive the proper attention. As for the disgruntled man, the hope that the poison on that tongue will disappear, that unless he has constructive criticism backed by facts he will offer none, and while we respect the memory of his ancestors he will not allow that memory to retard the progress of the age in which he lives. That he will in time find out his estimate of added value is only a myth, and let us ever hope that some day we will meet him carrying a full paper box home for wifie.

Now for the all important point "How to best realize these hopes." How to make these desires materialize, how to turn these dreams into realities. In dealing with the manufacturers we can best serve him by advising honestly what he should buy rather than what we feel we can sell him in competition with some other box maker. We are all too ready for the good of our industry, when we are pressed, to suggest a lower quality carton, thus destroying more than fifty percent of the value of what we are selling, and what he proposes buying. If we could only convince him that we are not selling a container but a silent salesman, which day after day is appealing to the public for fair trial. I say if this were a fact, what beautiful packages we could make and what packages would they buy. Would they send a salesman on the road today dressed in overalls. I say "No". Well, they are flooding the country today with those silent men who would use a pair of overalls if they had them for Sunday only. Men, we can encourage that better box, and if we are in earnest, we can make it a reality. To my way of thinking the opportunity is at hand and if we are successful in our endeavor we will get an increased sale of boxes far beyond our wildest dreams. How can we ask for division of that advertising budget and at the same time offer him a package that his good judgment would not permit him to nail up on a backyard fence.

We can also advise in methods of packing. If we could only lessen that burden would not the manufacturers be more willing to listen to our arguments, make his troubles along these lines ours, encourage machines for this purpose wherever possible, make ourselves the packing experts. All these thoughts if carried into effect will certainly increase volume which is what we have hoped for. Due to the fact that human nature is prone to follow the line of least resistance, we must expect that manufacturers will certainly act like human beings and in following this line, give to the buying public what they ask for. They have never expected that the ordinary retailer would be a salesman, and we certainly must admit that their judgment was and is today positively correct. They are simply order takers, giving what they have and never attempting a sale of something else which may even have better value. This condition, bad as it was, has been aggravated in recent years due to the more up-to-date method of merchandising, namely, the cash-and-carry stores.

These conditions therefore force us to concentrate our efforts on the buying public to a much greater ex-

tent than on the manufacturers. If we only could thoroughly convince the shoppers that a paper packed article is what they require, what a demand would spring into existence. Before going further I must say that that new cash-and-carry store will be in time a boon to our industry. We have had numerous calls recently from firms packing their particular line in cartons for the first time due to the demand of this particular line of stores.

Now, how are we to educate the buying public? A wide question, without a doubt.

I could suggest an extensive advertising campaign with an outlay of thousands, for anything else would be simply useless, but are we prepared to spend the necessary money? I don't think so. Let me suggest a cheaper way. Perhaps slower, but I think more efficient. Let each one start at home. Sell your own wife the idea, your own family, your own circle of acquaintances, your own employees. Even our own Secretary who honestly admitted some few weeks ago that he still preferred to buy his porridge in a fourteen pound bag rather than a paper box. He didn't feel that a package was worth more than a bag full of meal, which perhaps had for the past few weeks been the playground, the public park for that rat family. There are hundreds of arguments we can use. We must be salesmen. We must at least practise what we preach. Can we expect the public to buy an idea of our making if we do not support the proposition ourselves? Suppose we each only partly convince ten buyers who in turn no doubt would convince ten more and thus start an endless chain which would boost our industry to the pinnacle to which we think it deserves.

Now for the disgruntled man. He is in your circle, I say squelch him. Be prepared to give him facts and figures on added value. If you have none at your disposal give him some anyway, for the world knows his figures are based on guess, when for you there is a possibility of being correct. Let us stand up at all times and defend our industry. We are surely proud of it, if not, we have every reason to be.

In concluding, Gentlemen, the only good I have hoped to obtain with my humble effort is for everyone to stop, think and act.

SANITY AND POISE IN COMPETITION

Paper by Mr. D. H. McDERMID of Somerville Paper Boxes Limited, London,

I do not know why this subject was given to me. I wish I were capable of speaking wisely on the subject because the man who has known how to act sanely and wisely during the past three years has much to be thankful for. They have been difficult years — the kind of years that test men's theories, judgment and saneness.

I think that the first thing to do in facing a difficult situation in business is to analyze the whole situation.

Now in the process of analysis let us first make an analysis of general business conditions as experienced since the end of 1920.

You will remember how in the years preceding that period that the demand for boxes was greater than the ability to supply. New factories sprang up everywhere and old factories added a number of machines to those they already had. Everybody was buying freely and box manufacturers were freely buying machinery. Then came the slump. In 1921 we faced a situation where orders were scarce, buyers were few and as all manufacturers wanted business, purchasers were shopping their orders around to get the best possible prices. These conditions existed during all of 1921 and the first half of 1922. Then conditions started to improve slightly and have continued to improve to some extent although we are not yet, by any means, out of the woods. There is still a considerable amount of idle equipment in the country and box manufacturers in their desire to keep this machinery busy are tempted often to take orders which give little or no profit. Now under these conditions the question for every manufacturer to face is, what is the wisest thing for him to do.

The course, which to my mind is the most sane and the best to pursue is, first, make a careful analysis of your market. Second, make a careful analysis of your plant and equipment.

I look upon these two studies or analyses as being the very foundation stones of a safe policy. The tendency sometimes is, when business is very quiet, to buy new machines with the idea that in this way one would be enabled to secure more business. Perhaps you will, but the question to be considered is, will there be enough business to keep that machine sufficiently active to make it a paying investment? I know one very successful lithographer who was asked some years ago at a convention in Cleveland, how it was that he was never short of work for his machines. He replied: "I make it a point, never to be in such a position that a foreman has to come and ask me what job is to go next on a certain press." In other words, he specialized on certain lines and then always kept his equipment down so that it was capable of producing a little less than he could sell. I know another manufacturer with who I was discussing this point some time ago and he told me that when he could not keep a machine busy sixty per cent of the number of producing hours, he sold it. This is a matter which should be given very careful consideration and I would like to hear some discussion on it. In my own experience one of the things which has been of service to me has been the study of percentage-of-activity of different machines and if I were starting in business again there are a number of machines we now have, which would not be in the new plant.

Now then, having made a careful analysis of our plant and equipment so that we know what are the possibilities of that equipment, a careful analysis should then be made of the possible market for goods which can be turned out with the equipment now in hand and with the knowledge then gained we come to the next main foundation stone and that is:

Constructive Planning

(A) With a well worked out plan and a thorough knowledge of equipment and market, we are in a position to go after business. The question then comes to every man as to what business he can get and sell on his equipment at a profit. I think it is foolish to go after business which your equipment will not enable you to turn out at a profit. It may be for some particular kind of work your equipment is not adapted and

you cannot get enough of it to keep a new machine busy for say fifty percent of the time — what is the use of spending time and effort in going after that particular type of business? I would say to concentrate on the kind of work that it will pay you to turn out.

(B) The next very important step for each manufacturer is to know his costs. You know that I have preached many sermons on cost work and so I am not going to start again but I would say this that one of the most important things our association can take up is the working out of some uniform cost system which can be adopted by us all. Every time I get a cost demonstration from the Toronto Carton Club, I have one explanation of the wide variation in quotations given. The last cost demonstration which I received from the Folding Box section, showed me how on a large run of cartons there might easily be a difference of five to ten percent in the quotations given by different folding box manufacturers.

(C) **Quote a price that gives a profit.** In quoting prices always remember that a man cannot remain in business unless he quotes prices that give a profit. In our office we have had many discussions as to whether when things were dull and machines lying idle, it would not be a better policy to take work at cost or even a little bit below cost, so as to save part of our overhead, but we always decided that it was a better policy to quote so that we would make at least a little profit, than to quote below costs.

(D) **Quote only One Price.** I think there is nothing more demoralizing to the trade than for a manufacturer to have two or three prices. To go to a buyer and give him a price as your best price and then when he leads you to believe someone else is quoting lower, to make a second price, causes the buyer to lose confidence in you and makes him feel that the only way to get rock bottom prices is to work one manufacturer against another and in many cases, he misleads the seller into thinking that a competitor has given lower prices where as a matter of fact the competitor has not done so. Undoubtedly we all know many cases of that kind and we also know that those of us who make a practice of giving a price and sticking to it, lose many orders through competitors giving second and even third prices when they allow themselves to be beaten down by the buyer. At one time I used to make a good many contracts for advertising with newspapers. There were a few newspapers who had a fixed advertising rate and would not make a contract at any other rate. There were many, however, who would quote a rate and would finally close the contract at a rate anywhere from twenty-five to forty percent lower than the rate first quoted. I never left one of these offices feeling that I had got the best price; with the man who had only one rate, it was quite different. It is the same way in the box business, if a man knows we have two prices, he will never close an order with us on the basis of the first quotation given and he never feels that he has got our best price, while if, on the other hand, we make a price and stick to it, we establish in him a feeling of confidence in our integrity, which is worth a good deal to us.

Speaking of this two-price business, I recite an experience we are now having. We have one customer using solid boxes about the size of a shoe box, to whom we are quoting close prices. Somebody in Toronto quoted him better prices in carload lots. As we were able to make the rate cheaper in making up in carload lots, we quoted him the same price in those quantities, but now we learn that our Toronto competitor has come back with a still lower price, which we of course will refuse to meet. We do not know who the Toronto firm is but it looks to us bad business to come back with a second quotation on the same box and same quantities and of course it is straight cut-throat business anyway, because it would be impossible for a man to pay freight and make a profit on that class of work.

In conclusion, Gentlemen, I want to sum up what I have said:

1st. Analyze the whole situation.

2nd. On the basis of that analysis do constructive planning.

3rd. Inspire confidence in your customers.

BONUS AND INCENTIVE SYSTEMS

Paper by Mr. A. B. GREEN, of Dominion Envelope & Cartons Limited, Toronto.

It is not an easy task for a comparative newcomer like myself to address a gathering of keen business men, and to tell them anything about their business that will interest them. To hold their attention I must tell them something new, or something they have overlooked, and I recognise the difficulty of finding such a subject. It occurred to me, however, that you might be willing to bear with me for a few moments in listening to a description of certain methods that have proved of great value in other industries, but which have not been used to any great extent in our own.

I take it that you are all interested in making more money, and that you will agree that if you can achieve greater production with your present equipment, greater profits can be arrived at. My object is to describe certain systems of wage payment that have in many instances produced the desired results.

The problem of a fair wage is an ever present one. It is only human nature for a workman to do as little as possible for a fixed wage. It is equally due to our frail human nature that an employer will pay as little as possible for a fixed task. Between the employer and the wage earner there is an inevitable and almost insurmountable antagonism. Between Capital and Labor a well nigh unfathomable chasm. The pity of it is that the interests of each are mutual, and the welfare of one firmly bound up with the other.

To bridge the chasm, innumerable schemes have been attempted. Although there is no hard and fast geographical division, yet for convenience one may divide them into the British plan and the American plan. The British Plan deals with the Co-partnership of Labor and Profit Sharing. It is not within the scope of my paper to touch upon this except to say that by no means all of these schemes have proved to be successes, and to advise the most careful study before attempting the experiment. The American Plan deals with wage incentives to the worker, and is based upon the ideal of obtaining for the employer low production costs, and for the wage earner, high wages. The American Plan can be tried with little risk and very fair prospects of success.

We are all of us familiar with the two most common methods of wage payment — the time wage and piece work. Each of these has great advantages and grave defects, but every other system yet invented is a modification or a combination of these schemes. Let us examine the comparative merits of each.

Time wage depends solely upon the length of time worked, the rate per hour for both time and overtime being dependent upon local conditions. It has the great advantages of clerical simplicity and of being easily understood by the worker. It is flexible, and is immediately applicable to all kinds of work. In fact, in very variable work no other system can be applied except after careful and scientific study of the task. In certain kinds of work, where great personal skill or artistic judgment is required, and extremely high quality is of greater importance than quantity production, no other form of payment can be used.

It will be agreed that this form of wage payment, the most common in practice, has much to recommend it, but its disadvantages cannot be ignored. It offers practically no incentive to quantity production. In theory we believe that we pay according to merit. We figure that it is the function of our foremen to see that each workman produces the maximum possible, does not loaf, and always works as if our business were his.

Let me say, parenthetically, that we expect a little too much of our foremen, and if one of these men, usually risen from the ranks of those he controls, could show all the qualities we expect of him in the way of discipline, teaching and planning, he would be qualified to own our business instead of ourselves, and probably would.

I repeat that we expect our foremen to see that each man puts in a fair day's production, but is it not a fact that Jack, who is so constituted that he does a big day's work, draws exactly the same money as Bill who does just as little as he can get by with? Perhaps, being fair minded, you raise Jack's pay. Charlie is attracted by the extra money Jack is earning and equals his production. You increase Charlie in like measure. What happens? Charlie, having obtained his increase slides down to Bill's measure and you are faced with the alternative of firing Charlie who has proven he is a potentially good workman, or of reducing his pay, in which case look out for the explosion.

Now, there are more men like Bill or Charlie in the average plant than there are those like Jack, especially if the work is only semi-skilled. The result is that Jack does not have too good a time among his fellows, and if there is a suspicion that piecework rates may be installed, you will generally find that Jack's production falls off.

Another disadvantage that strikes one strongly in our own business, is the difficulty of estimating production. I think it is a common experience of folding box manufacturers that while a machine's performance may be accurately forecast, handwork, especially under a time wage system, is where we usually err in estimating.

Because production is usually low under a time wage, unit costs are necessarily high, and one turns for relief to the second of the well known systems—piecework.

Piecework has all the clerical simplicity of time work, is as easily understood by the wage earner. In addition it provides a definite unit labor cost, and it pays the worker strictly according to the work accomplished. It decreases supervision, but it involves inspection. It will be seen that piecework apparently overcomes the disadvantageous feature of time work, and it is undoubtedly true that in repetitive operations requiring no especial skill, piece work is probably the most suitable form of payment, provided always the rates are fairly set, and the conditions of work are, at all times, such, in the way of material, equipment and tools, as to make possible the rapid accomplishment of the work.

A disadvantage of piece work is that it has so frequently been abused in the past by employers that the wage earner looks upon it with suspicion. So frequently in the past have workmen responded to the incentive of piece work only to find that if their earning exceeded a certain maximum, the rates were cut. The result of this short-sighted and demoralizing policy, has naturally been that the workman sets out to fool an employer as to what is a fair time to do a task. To overcome this, rates may be guaranteed over a period.

Piece work rates are too frequently set on a foreman's guess or a general hunch. Sometimes they are based on past experience, but by any of these methods, the rates are probably wrong. If they are too low, the result is dissatisfied workmen and no increase in production. If too high the temptation to cut is very great, with the result mentioned. It has been suggested that beyond a certain high figure a list of discounts might be published, but this is merely a confession of guess rates.

Piece work rates should be based upon an exact knowledge of the task, gained by painstaking observation. The only accurate method to obtain this is by time study.

It may be well to observe at this point, that from the aspect of Costs, piece work can only fix the labor cost of the job. In the case of a man running an expensive piece of machinery, direct labor is only one part, and sometimes a very small part of the total cost. All overhead and indirect costs are inevitably upon a time basis, and the great object of the employer should not be to make the unit labor cost as low as possible so much as to reduce the unit time.

The fact that piece work rates do not vary in proportion to the speed of the operator, that the slow operator who carries the large time overhead obtains the same rate per piece as the fast operator with the small time overhead, led to the introduction of differential piece rates.

Before describing the differential piece work plan, it should be remarked that neither of the two methods of wage payment described overcomes in any way the antagonism between employer and employed to which I have referred. All the plans that follow do, to a very large extent, tend to overcome this, provided that they are known to be stable and fair. None of those are as simple clerically as the time honored methods and involve that over-rated bug-a-boo, an increase in indirect or clerical labor.

Differential piece rates are not the least of the many contributions towards Industrial Efficiency made by the late F. W. Taylor, a man whose clear insight, patient research and inspiring vision have well earned him the title of Father of Modern Scientific Management.

In the Taylor Differential Piece Work System, two piece work rates are given for each task — a high rate where a certain minimum production is accomplished, and a low rate where the minimum is not achieved. Thus, the good workman not only received pay for the larger number of pieces he has produced, but he likewise received a higher rate per piece. To illustrate this, if the standard set is to make 100 pieces in 10 hours, a low piece rate of 5 cents might be established, and a high piece rate of 7 cents. A man finishing 95 pieces in 10 hours would receive $4.75 while his neighbor would receive $7.00 for completing 100 pieces. The incentive of $2.25 for an addition of only 5 pieces is very strong.

The following illustration of the working of the system is taken from Taylor's book "Shop Management."

COST OF PRODUCTION PER LATHE PER DAY

Ordinary System of Piece Work

Man's wages	$2.50
Machine cost	3.37
Total cost per day	$5.87
5 pieces produced	
Cost per piece	$1.17

Differential Rate System

Man's wages	$3.50
Machine cost	3.37
Total cost per day	$6.87
10 pieces produced	
Cost per piece	.69

The Taylor System immediately accomplishes two results:

(1) It pays a wage not only commensurate with the amount of the work done, but also with the speed with which the work is done.

(2) It proclaims unmistakably to the operators that the management far from thinking of cutting rates, actually pays an extra bonus on all the product when a man's daily wage exceeds a certain minimum.

This system has been epitomized by one writer as that system where "nothing succeeds like success, and nothing fails like failure."

The principles upon which Taylor based his system are worth repeating:—

"(a) **A Large Daily Task.** Each man in the establishment, "high or low, should daily have a clearly defined task laid out before him. This task should not in the least degree be vague "or indefinite, but should be described carefully and completely, and should not be easy to accomplish."

"(b) **Standard Conditions.** Each man's task should call for a full day's work, and at the same time the workman should be "given such standardized conditions and appliances as will enable him to accomplish his task with certainty."

"(c) **High Pay For Success.** He should "be sure of large pay when he accomplishes his task."

"(d) **Loss in Case of Failure.** When he fails he should "be sure that sooner or later he will be the loser by it."

"When an establishment has reached an advanced stage of organization in many cases, a fifth element should be added, "namely, the task should be made so difficult that it can only "be accomplished by a first class man."

The system has been criticized because it offers practically no incentive to the average man. Mr. Taylor's words quoted above answer this. This system was deliberately devised to attract only the very highest grade men, and to pay such men from 30 per cent to 100 per cent beyond the wages usually paid.

This method is eminently suited to cases where repetitive operations upon expensive machinery are involved. Its chief defect from some standpoints is the large amount of preliminary work necessary before it can be installed. It may well be said, however, that this preliminary work is of such great importance, so surprising in the waste it discloses and the economies it discovers from the first moment it is begun, that any system that brings executive attention to bear upon this work is well worth while.

The work preliminary to the installation of the Taylor System, or any other system where exact standards are necessary, is roughly as follows:—

Standard times must be arrived at. Standards based upon past experience or upon a foreman's estimate are seldom sufficiently accurate for a system with so large a labor incentive. Methods of scientific research are applied to the work. First it is examined to eliminate all wasteful features whether of motion or materials. Then, painstakingly, the ideal process is built up. The proper sequence of motions is arrived at and recorded, and by means of elementary time studies, a standard time for the work is computed after making all necessary allowances for fatigue and unavoidable delays. The position of machines, benches and tools is made the most convenient possible, the best kind of appliances to use is carefully studied, the routing of work and material is carefully standardized, and no detail that affects the rate of production escapes minute examination.

The above work is the function of the Industrial Engineer. This profession has now won back the respect to which it was entitled. At one time, encouraged by the astounding success of the pioneers of the profession, a number of parasites unfitted by knowledge or aptitude for the work, called themselves "Efficiency Experts" and succeeded in installing a great deal of red tape without accomplishing any economy. To-day, the Fraternity have largely purged themselves of the unfit, and do actually accomplish savings far greater than the substantial fees they are entitled to ask.

The Taylor System, then, is not an easy one to install. It assumes a factory management nearly 100 per cent. efficient, and I do not think I disparage any one if I state that practically no one of us can lay claim to any such perfection.

Modifications of the Taylor System have been tried more or less extensively. For instance, a guaranteed minimum wage has been offered. In other cases, in place of two piece work scales as in the Taylor System, a graduated series of as many as ten steps has been tried.

The most widely used modification is that known as the Gantt Task and Bonus System which was invented by a colleague of Mr. Taylor, and first put to use as a stepping stone to the more severe system. The following quotation from Gantt's book "Work, Wages and Profits" briefly describes the system:—

"If the time allowed for a task is three hours, the workman who performs is in three hours or less is given four hours pay. He thus has an incentive to do as much work as possible. If the workman fails to perform the task within the time limit, he gets his day rate. The time allowed plus the bonus is the equivalent of a piece rate; hence we have the piece work for the skilled and day work for the unskilled."

The plan is, in brief, a straight time basis up to the point where a workman produces standard production, and from that point onwards, a piece work basis.

Another plan that presupposes the establishment of an only slightly less highly organized system of Factory Management is that developed by Mr. Harrington Emerson, famous for his work on the Santa Fe Railway, and perhaps the most entertaining of all writers upon Industrial Management. With his system, a graduated bonus is paid from the point where 65 per cent. of the standard is attained, and upon obtaining standard production a 20 per cent. bonus is paid. The standard is so set that it is possible to exceed it, and the bonus increases in like measure, so that for 120 per cent efficiency the bonus is 40 per cent and for 150 per cent. efficiency the bonus is 70 per cent. In the earlier stages the bonus is very small.

An objection to the Emerson scale is the fact that the scale is not easily understood by the workers. This can be overcome by carefully worked out charts and tables, but several simplified scales have been worked out. Other scales like that of Knoeppel give greater reward at the lower efficiencies.

The Emerson plan is widely used and has proved very successful. It has frequently been introduced as an intermediate plan between day work and a final plan. It is highly desirable that the standards be carefully set.

Each one of the previous plans presupposes that the standard time has been more or less scientifically arrived at. The Halsey Plan was first introduced without setting standards by time study, and although in every incentive scheme time study is advantageous, yet many successful installations of this plan and the Rand method are running without any such elaborate preparation.

It is interesting to note that Mr. F. W. Halsey was employed by the Rand Drill Co. of Sherbrooke, P.Q., when he introduced his plan. It consists briefly of setting a standard time for a task, and should the worker take less than that time, to share with the worker the saving in time, the worker receiving his share at his regular rate per hour. This share is usually one-third or one-half. For instance, if the task set was required to be accomplished in ten hours, and the workman completed it in seven, he would have saved three hours. If his rate were 50 cents per hour, the saving would be $1.50, and his share of this saving would be 50 cents or 75 cents in addition to the $3.50 he would receive for 7 hours at his regular rate. Should the workman take longer than 10 hours he would be paid at his regular rate.

This plan offers considerable inducement to the wage earner and commensurate savings to the Employer. It is of very widespread use, and the offer of half the savings earned usually appeals to the worker as being a fair proposition.

Another plan that has a great deal to recommend it is that known as the Rowan Plan. It is not so simple a method as the Halsey — is more difficult to explain to the workmen, but it has the advantage of saving the employer from paying excessive rates in case an error in the standard time has been made. No matter how quickly a worker may perform his task, he cannot earn as much as double time.

In this plan the time saved is expressed as a percentage of the standard time, and that same percentage is added to the worker's time rate as a bonus. Thus, if the worker saves two hours out of ten, his saving is 20 per cent. and he would receive for his eight hours work a rate increased by 20 per cent. over his regular rate.

This system will become clearer if it is remembered that when one quarter of the time is saved, time and one-quarter is paid. When one half the time is saved, time and one-half is paid. When three-quarters of the time is saved, time and three-quarters is paid.

A scheme that has been recommended as an improvement upon the Halsey or Rowan plans is that known as the Barth Premium. The Workmen's compensation in this plan follows the Halsey 50 per cent. premium plan quite closely until about one-half the time is saved. At greater savings than one half, the worker's return is much less than in the Halsey plan though more than in the Rowan plan. It, therefore, offers to the employer a greater protection against badly set standards than does the Halsey, but gives greater rewards for high savings to the worker than the Rowan.

The chief difficulty is the method of computing this bonus. It involves the extraction of a square root, and although this is a simple process where slide rules are used, it is felt to be too complex for the average office and can only be explained to the workers by means of tables.

The Estes Organization recommends a plan known as the 100 per cent Premium Plan. This method has the advantage of extreme simplicity in calculation. A task time is set and the worker receives one hour's pay at his regular rate for each task hour's work that he performs. In other words this is a piece work system cleverly devised to be upon a time rather than a dollar basis.

Various combinations of piece work and time work have been put into practice. For instance a time rate at one-half the usual figure might be offered together with a piece work rate at one-half the usual price, the worker receiving the sum of the two. This has the advantage of simplicity, and where a saving is made it is exactly the same as the 50 per cent. Halsey plan.

Combinations of piece work and time work other than 50 per cent. might be devised to suit special conditions.

It would be an easy matter to describe a great many other schemes that have been invented, but the majority of them are adaptations of these touched upon. Some plans take wastage upon material into consideration but there is no difficulty in adjusting any of the plans described so that the worker would receive an additional premium for minimum waste, or a discount from his bonus for excessive waste.

Other plans aim to pay all the bonus to the foreman upon the assumption that he will share with the workers. Some take material into account, in which case the foreman becomes to all practical purposes a subcontractor. Such plans have little practical application to our business, and I will not enlarge upon them.

I would conclude with a few general considerations,

(1) Take time and care to set your standards carefully.

(2) Guarantee that these standards will remain in force for a reasonable length of time; certainly not less than three months, preferably so long as there are not mechanical changes in the process.

(3) Give to your foremen, inspectors, adjusters and your indirect laborers a bonus based upon the average bonus earned by the direct laborers they serve.

(4) When direct bonuses cannot be installed—group bonuses are desirable.

(5) Keep your workers constantly under the influence of the incentive. This can be done by publishing daily at noon the previous day's bonus earnings.

(6) Make your bonus payments every pay day. A long deferred reward loses its incentive.

(7) Do not cut rates merely because the workers' earnings are large. Such a result is the object of installing the system. Do not forget that your costs are decreased in more than like proportion.

(8) Lastly, make sure your workers thoroughly understand the system, and are convinced that it is fair. You cannot take too much trouble to make sure of this. A reputation for being fair is worth twice a reputation for being generous.

(9) No bonus system can take the place of management. A good bonus system may fail under bad management. Under good management, especially that ideally good management, that not only has efficiency but also personality and goodwill that will permeate the organization, a well chosen bonus system will there find its natural soil, and will bring forth fruit many fold.

In conclusion, let me state that a properly designed bonus system not only pays according to effort, increases earnings, decreases costs but it also tends to cement the common interests of workers and employer, and it builds up for the latter an asset of loyalty and goodwill that cannot properly be reckoned in dollars and cents, which cannot be bought for money, and which may be easily the most valuable asset in his business.

TRAINING TO MAKE QUALITY BOXES

By Mr. Geo. O. Slingerland, Mechanicville Paper Box Co., Mechanicville, N. Y. Director of National Paper Box Manfrs' Association of United States.

It has been a great pleasure to attend a Canadian Box Makers Convention especially in this wonderful place that is largely as much American as Canadian.

Your good secretary asked me to write about Training to Make Quality Boxes. Quality boxes are the result of quality thinking and planning. They are made of good workmanship and cheerful spirits in clean bright factories. They cannot be made with discontented girls, unsanitary work benches or poor material. The spirit of good cheerful workmanship has got to follow the box from the time the board, paper and glue are bought until the boxes are in the hands of the customer. I am perhaps fortunate in having girls trained to make good boxes, but I think that anyone can train the right kind of girl if they themselves are possessed of the qualities that make quality. My idea has always been that a girl should only make such boxes that she is capable of making well. It requires a little judgment and tact when they are starting in on something new as they perhaps are nervous and afraid that they cannot make as much as on work they are accustomed to, but a little diplomacy will work wonders. I have noticed that the neat, clean girl turns out the best work. It takes quite a while to make a good worker out of most of the girls and some can never get the work neat, but barring marriage, sickness or removal from town, I have had good success in keeping trained girls to work. Have had two for 20 years, three for 15 years, three for 10 years and others ranging from 10 years to 3 years. During abnormal war-times and after, I had to take on a great many new ones and it surely required tact and diplomacy and everything else to keep going. Whenever I saw more than one girl approaching my office, I wished for a cyclone cellar to hide in until the storm had passed. Even the old reliable standbys were innoculated with the "get more for less" idea. I treat all the girls with respect but have never allowed myself to get more than friendly and in more than 35 years that has been some job. They know that they can call on me for any assistance it is in my power to give at any time, advice or help financially or otherwise. ¶ I generally have a couple of dinners a year in the shop. I however do not try to act as sole host, but furnish something like a roast pig, turkey or roast meat and ice cream and let the girls bring the salads, rolls, coffee, potatoes and the like so that they have a personal interest in the dinner without the thought of charity in any form. Several times I have hired a tug and flat boat and taken them on an excursion up the river. On these occasions I have let them furnish the entire feed and joined in with them in my share of expenses, pro rata. Other times I have had them to my camp on the Hudson River a few miles north of the factory. All I would do would be to furnish trucks to transport them and bring them back and perhaps make coffee and furnish ice cream. This establishes a mutual friendly feeling and avoids any thought of condescension which is fatal in the relation of employer and employee.

Now as to actual making of quality boxes. Give the girl a clean table, good glue, board cut and scored square, cornered out nicely, set-up square, paper cut just right, with a friendly feeling toward the work, the forelady and the boss, and quality boxes can be made. The conditions surrounding the making of a quality box are not made by the girl who makes them. It is squarely up to you to furnish her with the tools to work with. A forelady that can listen in on conversations and know the different feelings that exist between girls can do a lot by gradually getting together girls who are congenial or perhaps by putting a girl who is inclined to be sporty or one with a cross-grained disposition, in between a couple of girls who are sensible or good-natured.

I want to tell you of a happening a couple of years ago. I had an order for 100,000 bead necklace boxes. It was new work and I had agreed to produce them at the rate of 10,000 a week. I tried a girl who had had some experience on this class of work. ¶ It was a box about 9½ x 2⅝ x ⅜ with a ½ inch shoulder, hinged box, one piece cover, one piece made wet wrap with a piece on the back covering the hinge. The operator was to finish the box after the paper had been put on lower and upper part of the box. Her part was to put the cloth hinge on the box and cover, stick the shoulder in and out on the back piece to cover the hinge. This girl, after a few days work, said that 200 was the best that could be done. She was working day work and I was not satisfied that that was the limit. A girl from the High School applied for work after school had closed.

She was a likely looking girl and we showed her the work and she said she could do it. She was 15 years old and could only work according to New York State laws, from 8 to 5. She started in with the girl who was working on the work. The second day she had finished 210 of the necklace boxes, along side of the girl who said 200 was the limit. Then I put a sliding scale of prices in effect: up to 300, 75c per 100; 350, 80c; 375, 85c; 400, 90c; 450, $1.00. At the end of a week she was in the 350 class and in the second week she had got ten up to 450 per day and the older girl was still on the 200 mark. So I changed her work and gave the new girl's chum a job. She caught up to her in a week and I never enjoyed paying from $26 to $30 a week more than to those two girls. They were an example to the whole shop. The working hours were 7:30 to 5:00 and 7:30 to 11:00 A. M. on Saturdays. Those girls could only go to work at 8 and stop at 5, but at 8 they were on the job and at one minute of 12 they were on the job, at 1 they were on the job, and at 1 minute of 5 they were on the job. There was no visiting, nothing but work and after that, I didn't want a cyclone cellar. When a delegation appeared after that for more money, I said sure, your work will go on a graduated scale. You work like the two Bead Box finishers and you can make as much money as they do. The delegations soon quit coming and if I had had that cellar, I could use it for storage now for that article of commerce that Canada has and the United States wants. I don't need it as a refuge. Now this is an example of what a production wage will do.

Another means of holding down the turnover of help is a Bonus. A good many manufacturers start to see red when they hear the word bonus. I do myself on daily or weekly bonus but a little 2½ or 3 per cent bonus at the end of the year for any employee that hasn't lost any time except through sickness or no fault of their own, is a great means of solving the turnover in a shop. Try it out as a surprise to them. Do not promise anything definite. Next Christmas have some nice little checks prepared with a Merry Christmas and Happy New Year printed on them and hand say 2 per cent to them. If your payroll is $20,000, that is $400.00. But do not give the ones who have lost time on their own or those who have left and come back. Let it be understood that a bonus will be paid for steady work with no lost time through no fault of their own. But do not speeify the amount. If business is good the next year, make it a little more, if not good, a little less. But the little it costs you will be more than made up by the good feeling that comes from practically being taken in as a partner, and those little parties encourage them, but don't slop over, make yourself one of the help.

I have been playing ball with a team I had chosen against one the chauffeur had picked out. A 17 year old slip of an Irish girl was batting. I was pitching to her and she called me a big boob for not getting the ball over so she could hit it. That was a compliment, she accepted me as an equal. It doesn't hurt discipline to mix with them on these occasions, but do not have them stiff or formal. Play with them as hard as you can. Results will show in the work and in loyalty to you. Avoid faction in the factory. If you have an outing, see that they all go. Whether they are Irish, Scotch, English or French, Poles or Italians, see that they are all along and have the relatives go also. But avoid anything that savors of condescension. I have talked quite a lot about the social part of a box factory, but I absolutely believe that it is the yeast that helps to make quality boxes. One of the first things to teach a girl in making quality boxes is, that good enough is not good enough. That good enough idea is not right. Good is the word that should be the slogan in all box factories. I make a large number of boxes to put silk gloves in. These boxes must help sell the gloves. The box is a patented box and good enough is not known. They have got to be right and they are right, when they go out. Candy boxes the same. They all know that candy is something to eat and a dirty finger mark or a drop of glue is not something that they would want to find in a box of candy they had been presented with. Get the spirit of pride of good workmanship, in the girls, and with the materials cut right, proper working tools and surroundings, and quality boxes will be the result. It is part of my scheme to have satisfied girls and as I said before, good materials, pleasant surroundings, foreladies who can smile instead of frown, use tact and have a human understanding with the girls will go a long way towards making quality boxes.

REDUCING THE COST OF ACCIDENTS

By Mr. F. W. FISHER, of Messrs. F. W. FISHER Co., Limited, Toronto

The subject originally assigned to me, "Accidents", is so closely bound up to the cost of them that I cannot discuss one without the other. For reasons which will be explained as I go along my remarks are principally addressed to the Ontario Members. But I feel that my subject is so broad and of such vital importance to every manufacturer whether of Paper Boxes or some other commodity, that everyone here will be interested.

Some fifteen months ago at the Toronto Carton Club a discussion took place on the high cost of Workmen's Compensation Insurance and on the constantly increasing rate we were paying. A Committee was appointed to investigate the conditions. This Committee met, interviewed the Workmen's Compensation Board and prepared certain propaganda with a view of reducing the number and severity of the accidents in our factories.

Each industry contributing under the Workmen's Compensation Act is usually placed in a separate group so that the contributions of one class of manufacturers is not used to pay for the accidents of some other class. We found that after operating for several years up to the close of 1920 our industry known as Section 19, Group 3, had accumulated a small surplus. The rates paid ranged from 70 cents to $1.20 per $100.00 payroll.

1921 proved to be a very disastrous year. Several bad accidents occurred in Paper Box Factories, and the cost of them was so great that it wiped out our surplus and necessitated an additional levy of 30 cents per $100.00. Even then, when the final figures for the year were complete we still had a deficit of several thousand dollars. These Gentlemen, were the results for *one* year.

Your Committee determined that this calamitous year must never be repeated, and realizing that criticism without suggestion would not be acceptable we set about to secure attachments and recommendations for shop practice that we felt would be of enough value in every day use, to bring about a reduction in accident frequency with a corresponding saving in money.

These recommendations were sent out some months ago and we believe that they have been of some value to you. We have recently received our Workmen's Compensation Assessment bills for 1923. You will note a

rebate on each one of one-half the money you contributed for 1922, making the rate for that year 75 cents, exactly one half of the previous year's. This rebate is a cash saving of over $10,000, a portion of which was received by every manufacturer of paper boxes in Ontario. Such were the results for one year during which much more attention was paid to "Safety First".

The accidents for 1922 are much less serious and are fewer in number than they were in the previous year. They also cost very much less, amounting to less than $8,000 whereas in 1921, the figures were in excess of $25,000.

Believing that anything the Employer can do to prevent accidents is not only a very humane thing to do but because also Accident Prevention is a very profitable way to invest money the Committee made several recommendations that certain Safety Devices and Shop Rules be compulsory. The Toronto Carton Club unanimously approved of them and we now propose to discuss them here and if possible secure the consent of the Ontario Members of the Canadian Paper Box Manufacturers Association so that our Secretary may take the necessary steps to have these recommendations made compulsory.

Mr. Frame will now read the list of recommendations and we will take them up individually.

Before discussing these recommendations I might just say that had they all been in force during the year 1921 the Paper Box Manufacturers of Ontario would be the richer to the extent of nearly $20,000. This would have benefited not only those firms who experienced bad accidents but every single firm in the whole province. Each of us have to help pay for the accidents of everyone of us. Whether we be innocent or guilty we pay just the same.

Recommendations

1. The placing on every Automatic Clamp Paper Cutter of a two hand throw in.
2. That no Paper Cutter be operated where the clamp rises higher than the knife.
3. The compulsory installation of Stayer Safety Heads.
4. That a pair of Stayer Pliers be chained to each Staying Machine so that they cannot be carried away.
5. The compulsory use of Corner Cutter and Mitre Machine Guards.
6. That all operators of machines (both male and female) be required to remove rings from fingers while working at machines.
7. The installation on every Platen Cutter and Creaser Press of a Safety Device, which will prevent the operator being injured by the action of the press. The Committee recommend the safety device recently invented by Robt. Gold which in their opinion will absolutely prevent accidents on this type of machine.

Form in which number 7 should be sent to the Toronto Typothetae

7. The installation on every Printing Press of the type known as Universal, Colt's Armory, and other Presses with a similar motion, of a Safety Device, which will prevent the operator being injured by the action of the Press. The Committee recommend the Safety Device recently invented by Robt. Gold which in their opinion will absolutely prevent accidents on this type of machine. Gordon Presses are not included in this recommendation.

THOSE IN ATTENDANCE

Among those present at the convention were the following: Mr. and Mrs. A. G. Allen, Paper Sales Co., Toronto; J. J. Arnold, Canadian Paperboard Co.; Miss Alison, Galt, Ont.

Mr. and Mrs. Geo. Bochmer, K. & C. Bochmer Co; C. Wintar Brown and Miss Irene Brown, The D. F. Brown Paper Box Co's, Robert K. Brown, and J. L. Bourke, Canada Nashua Paper Co.; E. Bitterly, Warsaw, N. Y.; J. J. Binns, North Tonawanda, N. Y.; Rob't. L. Brayley, The Miller Bros. Co., Glen Miller, Ont.; David Brown, The J. L. Morrison Co., Toronto.

H. J. Cody, Toronto; Arthur M. Claffee, H. D. Knowlton Co.; E. G. R. Clarke, Canadian Nashua Paper Co., Montreal; E. P. Cook, of Samuel R. Parry; J. L. and Mrs. Constantineau, The King Paper Box Co.; H. A. Doughty, Canada Paper Co.; Robert S. Dunlop, Dominion Paper Box Co.; Mr. Wm. and Mrs. Eager, Hamilton Paper Box Co.

S. J. Frame, Secretary-Treasurer, Canadian Paper Box Manufacturers' Association, Mr. Wm. J. & Mrs. Feldkamp, Canada Glue Co.; F. W. and Mrs. Fisher, F. W. Fisher Co., Toronto; Mr. and Mrs. Fielder, The Fielder Paper Box Co., Toronto; W. T. and Mrs. Filay and J. R. and Mrs. Forth, the A. D. Shoup Co.; Martin Teybush, New Jersey Machine Corp., New York; G. D. Falkinberg, Price Bros. & Co.; A. C. Funk, Dextra Products Inc., Buffalo.

A. Bertram Green, Dominion Envelope & Cartons; J. B. M. Gibson, Ottawa; R. C. Gullen, Hobbs Mfg. Co., New York; J. H. Gledhill, National Gum & Mica Co., New York; R. S. Gold, Paper Sales Ltd., Toronto; Chas. E. Griffith, Jr., Price Paper Inc., Candem, N. J.; M. J. and Mrs. Griffin, Standard Paper Box Co.

W. J. Hood, Gummed Papers Ltd.; John, Jr. and Mrs. Hewitt, Paper Sales Ltd; Art Harvies, The Canada Paper Box Co., Montreal; W. J. Hampell, Hampell Paper Box Co., Brantford; A. C. Hacher, St. Catharines Paper Box Co.; O. A. Hutchinson, Toronto; G. and Mrs. Hancock, and Miss Hancock, Galt, Ont.

Alfred and Mrs. Jepthcott, and Miss B. Jepthcott, Toronto.

F. A. Kerr, Chas. Reid & Co., Hamilton.

J. B. Lawrason, Lawrason-Doughty Co.; Jas. Logie, Canadian Paper Board Co.

M. F. McKay, Paper Box Co.; Duncan H. McDermid, Somerville Paper Boxes, Ltd.; Robert Minkow, Hobbs Mfg. Co.; F. W. McGraw, Ernst & Ernst, Buffalo; John R. and Mrs. Marshall, The Canadian Nashua Paper Co., Peterboro.; A. and Mrs. Manchester, Regal Paper Box Co., Toronto; A. B. Meredith, Meredith, Simmons & Co., Toronto, F. E. Theodore Mauz, Rochester, Mfg.; L. P. Morrison, Automatic Paper Box Co., Toronto; N. V. Morrison, W. J. Bell Co.; W. H. McCullough, Brompton Pulp & Paper Co.; W. W. Miller, The Miller Bros. Co.

C. F. Micholls, London, Ont.; J. A. & P. K.. Northey, Telfer Paper Box Co.

A. F. Ogh, Paper Sales, Ltd.

C. B. Pearsall, Price Bros. & Co.; D. Porter, Rudd Paper Box Co. Toronto.

C. DeWolf Reid, Montreal; David F. Robertson, Canadian Paperboard Co.; Chas. F. Rand, North Tonawanda, N. Y.; Harry Edwin Roden, The Shears, N. Y.; C. T. & Mrs. Reid and Miss Reid, Chas. Reid & Co., Hamilton; Geo. B. Reid, Ontario Paper Box Co.; Mr. and Mrs. and Rowell, J. C. Wilson, Ltd., Montreal; John T. and Miss Prudence Robinson, John Robinson Co., Hyde Park, Mass.

Chas. V. Syrett, Victoria Paper & Twine Co., Toronto; Geo. O. Slingerland, Mechanicville, N. Y.; Bart Sproule, Collett-Sproule Ltd.; Geo. and Mrs. and Miss Audrey Stephenson, Stephenson Paper Box Co., London; Paul G. Otto P. and Mrs. O. P. Schultz, John T. Robertson Co.; R. J. and Mrs. Sharp, Milwaukee Lace Paper Co.; Kohn J. Small, Guelph Paper Box Co.; H. W. Spears, M. D. Knowlton Co.

W. C. Traftson, Stokes & Smith Co.; Avis G. Thomas, New York; Jas. W. and Mrs. J., Roy and Mrs. R. Tresidder, Tresidder Bros., Hamilton; Chas. S. and Mrs. Taylor Ritchie and Ramsay, Ltd., Toronto.

M. J. Whippola, New Jersey Machine Co., Toledo, O.; T. G. and Mrs. Whitside, Stratford Paper Box Co., Stratford; Chas E. Whitter, Canadian Paperboard Co., Montreal.

One bad habit can hurry a man to his grave in middle life who, without it, might have lived another thirty years.

Steel Belts and their Application to the Solution of Conveying Problems*

By HARRY CARLSON,
Sandvik Steel Works, Inc., Sandviken, Sweden

The steel belt is by no means a new development, although it has only recently been placed on the American market. During the past thirteen years it has been extensively used in Europe in the many phases of the engineering field—over 1,300 installations having already been made for conveying such materials as clinker, cement, sand, rock, ore and ore concentrate, coal, coke and charcoal, carbide, silica, soda, salt, sugar, cossettes and beet pulp, milk powder, yeast, vegetables, sweets and chocolates, deals, battens, slabs, edgings, chips and sawdust, clay, gypsum, brick, and briquettes, bags, boxes, packages, steel forgings, gun cotton, glass.

Much experimenting and conscientious application has been necessary to bring it to its present state of development, where it has without a question of doubt demonstrated its decided superiority over conveyor belts at present employed, as well as other types of conveyor equipment. In every installation made it has been found to be both efficient and economical.

The adaptability of steel belts for solving conveyor problems in all phases of the industrial field for all kinds of materials has by no means been completed, but is still in the process of development. Intimate co-operation between the manufacturers, who are familiar with the particular features of design so essential to steel belts, and the customer, who wants certain work performed at a given time and under given conditions, is necessary in order to arrive at the end desired.

I shall endeavor in this paper to discuss the steel belt from a general point of view, giving you an idea as to what the steel belt is, how it is set up and works. A short history of the steel belt known on the market as the Sandvik belt will undoubtedly be of interest to you.

Development of Steel Belt

The manufacture of steel belts was started about thirteen years ago by the Sandvik Steel Works of Sandviken, Sweden, which has had a wide experience of over fifty years in the cold rolling of steel. The company has always made a specialty of high grade cold rolled materials, and for this purpose acquired controlling interest in a large number of the world famous Swedish mines producing iron ores low in sulphur and phosphorus. It may be interesting to know that the expression "Swedish steel" was originally applied to steel made from these ores.

Innumerable examples evidence the fact that, no matter how good the raw materials may be, skilled labor is required to obtain a high class finished product. The Sandvik Steel Works were among the first to produce high grade steel; in fact, the first to produce Bessemer steel on a commercial basis, and have persistently kept up traditions. As a result they have today at their disposal a force of labor trained through generations for this particular kind of work.

The Sandvik steel conveyor belt was not originally manufactured for this purpose, but the application as a belt was found for the exceptionally long, wide, straight and smooth steel strips that the rolling mill was capable of producing. After patient experimenting covering a period of years, the methods of rolling, hardening and tempering were perfected and the product accordingly improved to meet its particular requirements before it was finally placed on the European market thirteen years ago.

Great Strength and Long Life

The many attempts made to utilize steel in some shape or other, to improve the ordinary conveyor belts, and, further, the successful application of the Sandvik belt in almost every phase of the industry, should evidence the fact that present belts need improvement. They can be supplanted by something better, and it is interesting to note that the steel belt in most cases more satisfactorily meets the requirements of a conveyor belt. It is self-evident that no other conveyor belt material can have the same high wear resisting qualities as the steel belt.

It is a well-known fact that a piece of steel subjected repeatedly to stresses far below the ultimate strength will break, due to the destruction of its molecular structure, crystallization or "fatigue." For the ordinary grade of steel used in machine building the maximum bending stresses allowed are limited to about 12,000 pounds per square inch—for high grade alloyed steels stresses allowed may run considerably higher.

The Sandvik steel belt is subjected to a stress of 28,000 to 30,000 pounds per square inch when running over a standard pulley 40 inches in diameter. We might mention incidentally that in the standard practice of steel belt design the width of pulley face is three-quarters of the width of the belt, crowned in the usual way, but made flat in the center one-third of the width of the pulley face. In addition to the aforementioned stresses it has to take the initial tension and the pull required, which, however, in contrast to other belts, are nominal for all ordinary installations compared to the bending stresses. The latter are determined by the proportion between the thickness of the belt and the diameter of the pulley. For practical reasons a high carbon steel strip of certain width cannot be rolled to more than a certain thickness, hence it is necessary to establish a standard diameter for pulleys, specific rules for the location of idlers, especially when the belt is to be caught up, etc.

High-grade Materials Used

The Sandvik belt is made of the very best Swedish charcoal steel, cold rolled, hardened and tempered—hence it possesses a hard, smooth and dense surface, making it highly resistant to rust, as well as chemical

* From "The Paper Mill".

action, evidenced by hundreds of successful installations in the chemical field conveying wet and hot material, and running in the open air subjected to the influence of rain, snow and sunshine, and under extreme changes of temperature. The steel belt does not deteriorate when idle — the smooth surface facilitates an unexcelled cleanliness — to be obtained by the simplest means; finally, the fact that stresses due to initial tension and pull are nominal compared to bending stresses accounts for the possibility of making conveyors perforated without influencing appreciably the life of the belt, since the perforating has no influence on the bending stresses, the latter being exclusively determined by the proportion between the belt and the diameter of the pulley.

At the present time it is rolled in widths up to 16 inches, one-piece lengths up to 350 feet, and thicknesses up to .04 inch. The longitudinal edges are rounded and smooth. The flexibility of the material may be judged from the fact that the coil of 300 feet of 16 inch belt is sent out packed in a case 2 feet square by 1 foot, 6 inches deep, weighing approximately 2 pounds per foot run.

Characteristics of Steel Belt

The Sandvik conveyor is designed in two ways, either with the conveying strand sliding on a wooden support, sometimes fitted with skirting boards, trough-like, the return strand being supported on idlers, or else both strands of the band are carried on rollers in the usual fashion. The sliding type, with or without skirting boards, is extensively used for conveying non-abrasive material. Next to no wear is caused in this type, even for conveyors of considerable length, as the surface of the runners soon acquires a polish that the friction and consequently the power consumption is almost negligible.

As compared with flat rubber belts of the same width, the steel belt possesses greater transverse rigidity and therefore a higher capacity, as the edges, even with a one-sided load, do not yield in a downward direction. This allows a relatively broader part of the belt to be used for carrying the load. These attributes are obvious and are due to the fact that the steel belt is less flexible than the textile fabric.

The speed at which the steel belt should be run depends on the length of conveyor — ordinarily it varies between 135 and 300 feet per minute — and capacity is thereby determined. The average speed, however, for the average length conveyor is about 200 feet per minute.

Considerable attention is given to the proper designing of feeding hoppers to ensure the maximum load per foot of belt.

The joint is an ordinary riveted lap joint with short overlap, and can be made complete in less than an hour. Countersunk rivets are used. For punching the holes a special tool is supplied, which makes the jointed work extremely simple. It has been found, after extensive experiments with many different kinds of joints, that the one herein mentioned is by far the simplest, most efficient and economical.

The Belt in Use

In many cases existing structure can be easily adapted to accommodate steel belts, and under favorable conditions existing and pulleys and idlers can, with a little modification, be kept in use also. Erection is comparatively simple and full instructions are supplied. Most customers undertake the erection themselves, merely having an experienced erector sent along by the manufacturer to generally inspect after completion, mount the belt, make the first joint, and start up.

A special feature is the remarkable ease and simplicity with which material can be discharged at any desired point along the conveyor without the use of cumbersome and expensive trippers. The belt does not stretch and the tension devices are therefore very simple, as they only have to take up trifling variations in length, caused by changes of temperature.

Unlike other conveyors, the drive can be arranged either at the head or tail ends to suit the local conditions or purchasor, and is equally efficient at either end. When required, both strands can be used simultaneously for conveying in opposite directions and under suitable conditions the conveyor can be made reversible.

Inclines vary somewhat with the material being handled. In a general way, a figure of 1 to 4 is the limit for a smooth belt which has to be scraped off for unloading, but if terminal unloading only is to be used, slats can be affixed to the belt at intervals and the incline increased to about 1 in 2.75.

It has frequently happened that when elevators have been favored for a lay-out on account of the incline, a conveyor lay-out has satisfactorily solved the problem at lower cost and at much greater reliability and freedom from a large number of moving and wearing parts.

The steel belt conveyor is not a "cure-all," but is claimed to be simpler and more durable than the already simple band conveyor, to offer stronger material, and avoid the large number of working parts of drag link and gravity bucket conveyors, and to be competitive in price.

It is obvious that the introduction of the steel belt has widened the field of application of the belt conveyor, which previously had not been suited for conveying hot and sticky materials when only the textile and rubber belts were available, and it should be welcomed by the engineer interested in the handling of materials, as the steel belt is the ideal system of conveying. Such sticky material as sugar, for instance, can be cleanly and efficiently scraped off. Sharp edged cutting materials, such as glass, can also be transported on this belt. Finally, material which on account of its high temperature, cannot be economically handled on belts of rubber or balata, can be handled on the steel belt.

WHAT IS YOUR LIFE WORTH?

If you are a salaried man, you are earning, by the exercise of your brain or muscle, say $3,000 a year, at least one-half of which you employ in the support of your family. Then the money producing value of your life to your family is worth $30,000, since a policy of $30,000, when realized, will yield a sum which if invested at five per cent. would give your family $1,500 income a year. Is your life insured for anything like its full value?

Happiness is a perfume that you cannot pour on others without getting a few drops on yourself.

Waterglass as Adhesive for Paperboard

In a contribution to the review section of the *Journal of the Society of Chemical Industry* for September 30 1922, Rex Furness describes the properties of sodium silicate (waterglass) as an adhesive. He says that commercial sodium silicate possesses all the essential properties of an efficient adhesive, viz. (1) ease, suitability, flexibility, and general efficiency of application to the materials to be united; and (2) power of "setting" in a suitable manner and time with the formation of a bond of desired strength.

(1) The physical characteristics of a sodium silicate solution can be predetermined by the manufacturer so that it will penetrate into the surface pores or irregularities, whether these be of large or microscopic dimensions, of the materials to be united, without saturating or passing through such materials; in other words, its viscosity can be so adjusted that it is neither too thick nor too thin for a required purpose. The surface phenomena exhibited between silicate solutions and the various materials which may be united with its aid are not well understood, nor is the reason why a bond is formed at all (this applies to adhesives in general, since the precise physical or chemical property upon which adhesion depends is not definitely known); it must, therefore, suffice to state in this place that silicate solutions will "wet" the surfaces of such substances as paper and paper products, wood and abrasive materials.

(2) The setting of a silicate adhesive may result from cooling, or from the evaporation or absorption of water, or from all these causes combined. A smaller abstraction of water is needed from concentrated silicate solutions than from many animal and vegetable glues, so that the speed of setting can be greatly increased, and with it the speed of the particular machine upon which the work is being effected. The bond is permanent and is not disturbed by warmth as in the case of certain adhesives. The bond strength is perhaps not so high as that of animal glue, but it is superior to that of most other adhesives, and, what is far more important, the minimum bond is greater than the tearing strength of the materials with which it is used.

Advantages of Silicate Adhesives

Silicate adhesives may be prepared with any desired viscosity and setting time, and their composition can be varied to enable articles made with their aid to withstand any particular conditions of temperature and humidity. These adhesives do not putrefy or decay, they are immune from any form of bacterial activity, and they repel vermin. They are fireproof, and although not absolutely resistant to water the materials manufactured with their aid are damp-proof. The fact that they are odorless is of especial importance in the manufacture of built-up paper-board and corrugated containers for food products.

Again, silicate adhesives are cheap, both relatively as to the quantity required for uniting materials and absolutely. These facts, taken in conjunction with the important point that they are perhaps the easiest to use, as they do not require the application of heat, and may thus be kept ready for immediate use, must be regarded as constituting very substantial claims.

Let us compare briefly some of the above-mentioned properties of silicate adhesives with those of animal and vegetable products. Animal glue, for instance, is liable to deteriorate if not kept dry. Its solutions must contain disinfectants in order to prevent mould growth, and they are by no means odorless. Batches of glue solution must be freshly made at frequent intervals; and this adhesive is much more troblesome to apply than silicate adhesives, which are almost always applied cold and in the state in which they are received from the manufacturers. The organic constitution of glue and other popular adhesives renders them combustible, putrescible, and attractive to vermin.

Casein adhesives are troublesome in use as compared with the always available silicate solution, and in addition casein glues must be used very soon after the solution has been made. Even the patented and special types have a hardening period of a few hours only, and casein glues in general, like animal or gelatin glues, cannot be relied upon to afford constant and uniformly reproducible batches. Many influences have been traced which affect casein and render such irregularity inevitable. Silicate adhesives of a specified quality and composition can always be relied upon to give constant results, provided temperature, humidity of the workroom, and other variable factors are controlled. Starch and dextrin adhesives are relatively weak in bonding strength, and in spite of the numerous special and patented "modified" starch adhesives, they are troublesome to prepare for use.

Sodium Silicate Solutions

The large variety of silicate solutions has rendered possible their use in many manufactures. Thus, the built-up paper-board industry finds no better adhesive; the facing or lining of corrugated paper or board, the production of multi-ply veneer, the manufacture of "mandrel" paper articles for food containers, etc., the employment of silicate as a sealing agent for packages, cartons, etc., the binding of artificial or natural abrasives in the making of abrasive wheels, and so forth, may be cited as examples of the use of silicate adhesives.

It will be obvious that one definite adhesive solution cannot serve for more than a limited number of purposes. The great merit of silicate is that it can be made into a large number of solutions of varying viscosity, stickiness, etc., and the composition of the "silicate" itself (the word "silicate" covers a wide field in commerce) can be modified so as to confer almost any desired physical state upon its solutions. To gain an insight into the basis of this wide range of properties, some account must be given of

the variations possible in the constitution of silicate glass itself, and of the inter-relations of its solutions.

Sodium Silicate and its Colloidal Solutions

Although the chemical compound of Na_2SiO Aq. can be isolated as a crystalline solid, it has little or no interest in the manufacturer or user of sodium silicate, since in solution it possesses none of those physical properties upon which most of the applications of "silicate" depend. The sodium silicate of commerce may be said, broadly, to consist of a colloidal solution of silica in Na_2O,SiO_2 or $Na_2O,2SiO_2$ (or both). Although not extensively applied in industry, the yellow and green silicate "glasses" are well-known to the chemist—the colors being due to iron compounds in the ferric and ferrous state respectively. The ordinary "water glass" of commerce is obtained from these "glasses" by dissolving them in water, allowing the aluminous and ferrous impurities to settle out, and evaporating the solution.

The ratio of sodium oxide to silica in commercial silicate solutions is usually calculated from percentage compositions, and is not expressed molecularly; it varies from about 1 : 1.5 to 1 : 4. Many changes occur as the proportion of alkali increases; the total possible solid content increases greatly, the solution becomes heavier, and the viscosity at a given specific gravity diminishes. To take the case of two silicate solutions in which the ratios are approximately 1 : 1.5 and 1 : 4, respectively. At a constant gravity, say about 70° Tw., the more alkaline silicate is a thin liquid, easily poured, whilst the product high in silica is jelly-like and stiff. Conversely, to obtain both silica solutions in an approximately similar state of viscosity, the alkaline product must be concentrated to almost twice the above gravity.

At this commercial limiting concentration, there are differences in the physical properties of the two types of silicate solutions. The product high in silica is jelly-like, and can be moulded to some extent, but the highly alkaline silicate is a viscous and sticky liquid, which can be drawn into threads, and which easily absorbs water from the atmosphere, so that it "dries" badly in use.

Between these two chosen extremes of alkali-silica ratio lie the silicates of commerce, and it will be appreciated that all grades of viscosity, stickiness,setting time—dependent upon ease of "drying"—and total content of solids can be produced by altering the alkali-silica ratio, and working the gravity in correlation.

The facts may be summed up as follows: (1) When the specific gravity of the solution is kept constant, the viscosity and alkali content vary inversely; (2) if the viscosity be kept constant, the gravity and alkalinity vary directly.

Examples of solutions from large shipments may be quoted to illustrate this point:—

Gravity (°Tw.).	Ratio $Na_2O:SiO_2$	Viscosity (at 20° C.).
(1) 85 ..	1 : 3.26 ..	21.9 C.G.S. units.
(2) 87.7 ..	1 : 3.16 ..	10.8 C.G.S. units.
(1) 71.6 ..	1 : 3.53 ..	3.1 C.G.S. units.
(2) 71.96 ..	1 : 3.48 ..	1.7 C.G.S. units.

Although the gravity is not quite constant in either of the two cases shown, it increases from (1) to (2) and should therefore, of itself, tend to *increase* the viscosity. Limits are, however, set to the indiscriminate extension of these variations. Thus, if the alkalinity of the solution be too high, a very slow-drying water absorbent silicate results; and there are other objections which will be discussed later.

Broadly speaking, the viscosity and stickiness of a silicate solution can be arranged by the producer so that it will fulfil all requirements from an adhesive standpoint and possess no disadvantageous qualities.

The Alkalinity of Silicate

Such an alkalinity as is represented by a 1 : 1.5 ratio would lead to discoloration of the paper or wood products with which silicate is chiefly used as an adhesive. Many paper-board articles, *e. g.*, food containers, are covered with a facing paper or label printed in colors. Now many colors are affected by alkali and labels printed in such dyes or inks become discolored after long contact with a package of which the material has been built up with the aid of silicate adhesives of high alkali content. Paper tubes, made from mechanical woodpulp stock are "stuck" in the course of making by means of silicate, and if this is too alkaline, a yellow color develops at the overlap. Further discussion of the effects of alkali in highly alkaline silicate solutions is unnecessary, as it has been stated that the chief use of silicate as an adhesive is for paper and wood products, which are readily susceptible to alkali attack. It should, however, be pointed out that other factors influence staining, and that a thin "neutral" silicate will stain a white board more than a thick highly alkaline product, facility of surface absorption and penetration having to be considered.

No one realizes the significance of alkali content more than the manufacturer of silicate, for this reason silicates are not made with a high alkali content, and if the user will employ the adhesive as sparingly as possible—which is not difficult, as silicate spreads easily—no staining need be feared.

Labels printed in alkali-destructible colors have been successfully pasted on to containers with the aid of silicate of low alkali content, the labels being reasonably thick and not spread too thickly with the adhesive. In general, however, dyes affected by alkali should not be used in labels or colored outside wrappings which are to be affixed by means of silicate.

Excessive alkali in a silicate adhesive tends to make the material with which it is used somewhat hygroscopic, and to render it very "slow" on the machine, *e. g.*, in paper-board manufeture. An alkaline silicate can be made sticky enough to cause edges to adhere after a short contact. Hence a balance must be struck between the various desirable qualities; in this way only can an article be produced which is sufficietly viscous and sticky, which has a convenient drying and setting rate, and whose alkali content is as low as is consistent with the realization of the other essentials.

Applications of Silicate Adhesives

Built-up paper-board, box-board, container-board and the like are made by uniting several sheets of paper-stock, not in themselves thick or strong enough for use in making packages, food containers, etc. A four-ply board is a common article of manufacture,

and is made by uniting two "inners" of cheap mechanical woodpulp stock or chip stock, with two "outers" of a suitably (resin) sized manila or jute stock. The "inners" are. say, 23 to 30 "points" in thickness. —a point represents a thousandth of an inch—whilst the "outers" range from 4 to 8 "points" in thickness. Silicate is applied by suitable spreading rollers to the "inners" only, the machine positions the "outers," and the potential board passes to pressure rollers, where the union is completed. A good adhesive has dried at this stage, so that the completed board can pass on immediately to the cutters and trimmers. The edges of the board do not become loose, and the loss by cutting and trimming is only a few per cent. even with the machine running at, say 100 ft. per minute. A consumption of 35 to 40 lb. of silicate per 1,000 sq. ft. of board made is a normal usage.

Several factors influence the efficiency of the machine, and of these temperature, humidity and quality of stock may be noted. In some factories the temperature is kept uniform by artificial means. It is obviously possible to use heated silicate adhesive, so that after application to the stock, the union takes place both by cooling—the silicate becoming more viscous—and by increased evaporation of the water. The stock should absorb the silicate as uniformly as possible, for if the "inners" are relatively more porous, it will be necessary to overload them in order to leave enough adhesive to make the bond with the uncoated "outers."

The production of wall-board, book-bindings, cloth-board and in fact all kinds of built-up products made of wood or paper stock, requires no elaborate consideration, but it may be noted that mandrel-made articles—spiral or lap wound—are produced with silicate adhesives. The making of cylinders from plane sheets of strong board—the cylinders afterwards being cut into suitable sizes for food containers—presents difficulties which can be overcome. Thus, the "spring" of the board demands that a good "hold" at the overlap be quickly attained, otherwise the rate of manufacture is lowered. The alkali content of the adhesive must be watched, so that staining of the board shall not result, and, as above noted, the balance is struck between the various essentials.

Corrugated or crimped paper or board is often made into a three-or five-ply product. Thus, the latter consists of two corrugated sheets with a central, an outer and an inner liner or facing of suitable paper. This is affixed by smearing the tips of the ridges with silicate and pressing the liners upon them. The same qualities in the adhesive are again demanded, and the output of the machines is regulated by the speed of drying, the completion of the bond, etc. Silicates with 8.8 to 9.3 per cent of sodium oxide and 28 to 29 per cent of silica (76-81° Tw.), are found suitable but a compound with as much as 11 per cent of sodium oxide has been tried; such silicates, however, are not as yet in general use.

The adhesives used in the production of built-up wood-boards—veneers—are casein, alkaline starch glue, etc., but silicate is finding increased application. A thinner silicate can be employed, since pressure is applied for some time after building up the composite product. A silicate of about 55° Tw., with a relatively low alkali content, is preferable. "Fillers" may be added.

As a final example, the bonding of natural or artificial abrasives for the manufacture of abrasive wheels may be indicated. A mixture of abrasive, clay, and silicate is moulded and subsequently baked. A strong bond is formed, possibly by interaction between the alkaline silicate and the aluminium hydrosilicate of the clay. Occasionally there is interaction between the alkaline silicate and silicon carbide abrasive employed, but the addition of potassium permanganate, which reacts with the hydrogen otherwise evolved, has been claimed to prevent imperfections caused by liberated gas. Silicate adhesive is largely employed in abrasive-wheel manufacture, but dry silicate "glass" is perhaps more suitable than the solution, the "glass" being employed in the dry process of wheel construction.

TEN YEARS OF THE MELLON INSTITUTE

The Pulp and Paper Magazine is in receipt of the 10th Annual Report on the Industrial Fellowship of the Mellon Institute of Industrial Research which has been in successful and increasing operation at Pittsburg for a decade. It speaks well indeed for the foresight and the organizing ability of Dr. Robert Kennedy Duncan that the work he started has furnished so significant a contribution to the research work and the industrial improvement of the past ten years. Dr. Duncan had already formulated and put in preliminary operation the industrial fellowship system as far back as 1906, but it was not until March 1913 that Andrew William Mellon, now secretary of the Treasury of the United States, and Richard Beatty Mellon established the Institute on a permanent basis and it has flourished ever since. Outside of the distinct and unquestioned contributions that this Institute and its work have made to industrial activity in the United States, there has been a no less important contribution to industry in the form of successful and friendly co-operation in the attacking and solving of mutual problems. The idea of competitors in any field getting together for co-operative work of this kind was quite new when Dr. Duncan established the Institute, but it has now become quite a common feature of industrial life on this continent, although earlier examples can be found in the experience of British industries. It is interesting to note that a Canadian University is represented among the holders of industrial fellowships at the Mellon Institute and that several of the problems being studied have to do with the pulp and paper industry.

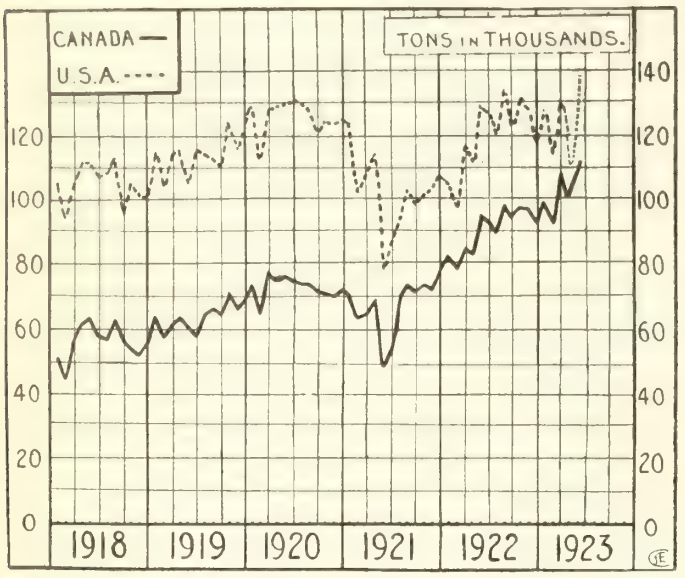
BUSINESS HOLDING UP

Mr. James W. Sewall of Old Town, Maine and Washington, D. C., whose business of timber cruising, mapping, and land appraisal usually reflects the condition of the lumber and pulpwood trade, reports the highest activity in his work since 1917.

From his northern office Mr. Sewall has crews at work, not only in Maine, but in Vermont, Ontario, Quebec and Nova Scotia. His organization has looked over about a million and a half acres so far this year, and new work is coming in every week, with no present signs of any let up. Mr. Sewall feels that this augurs well for at least the immediate future.

NEWSPRINT PRODUCTION IN MAY

The Canadian Pulp and Paper Association reports that Canadian and United States newsprint mills made new high records for production in May, the production in Canada being 112,135 tons, compared with a previous high figure of 106,361 tons in March, 1923, and the United States production being 138,868 tons, compared with the previous record of 133,236 tons in August, 1922.



Total production for the month was 251,003 tons, compared with 217,461 tons in April, and with 224,452 tons in May 1922.

For the first five months of the year production figures were as follows: —

5 M'ths.	Canada.	U.S.A.	Total Tons.
1923	510,970	626,944	1,137,914
1922	423,918	562,912	986,830
1921	319,273	528,678	847,951
1920	367,934	629,244	997,178

Canadian production for the first five months of the current year was 20 per cent greater than in the corresponding period of 1922, and 39 per cent greater than in 1920.

United States production was 11 per cent greater than in 1922, but was a little less than in 1920, the previous "peak" year.

The monthly average production of Canadian Mills up to the end of May, 1923, was 102,194 tons, against a monthly average of 84,784 tons for the corresponding five months of 1922.

HAMMERMILL PAPER CO. ESTABLISHES FELLOWSHIP AT N.Y. FORESTRY COLLEGE

The Hammermill Paper Co., through their Chemical Director Dr. Bjarne Johnsen, have offered to the trustees of the New York State College of Forestry a fellowship for the coming year (September 1923-1924) to be known as the "Hammermill Fellowship in Pulp and Paper Manufacturing."

The fellowship requires that the recipient be a graduate student at the College (his work leading to the degree of M.S.). His major problem, which is to be chosen jointly by the Hammermill Company and the Department of Forest Chemistry, is to be a fundamental one — and he is to receive $1,200.00 during the year of his candidacy.

Mr. Burton L. Kassing, 105 Grove Place, Utica, N.Y., member of the graduating class, has been designated by the company and the college as the recipient of this signal honor.

This is the second grant received by the College during the last month. Charles Lathrop Pack, President of the American Tree Association and publisher of the *Nature Magazine*, established the Charles Lathrop Pack Foundation which consists of a $1,000 bond bearing interest at five per cent, the proceeds being given each year to the student who submits the best thesis on the interpretation of forest policies to the public or from the public viewpoint—the principal idea being to bring the message of forestry and the necessity for scientific forestry in this country before the people.

THE FOREMAN'S DUTIES

The choice of a foreman is extremely important because of the immense power of that officer to affect the affairs of the works for better for worse. Although the post is not one of very high rank it joins up the activities of the two great branches of a factory; the devising and directing, and the actual producing. It is on the effective co-operation of these two functions that success depends and, consequently, the position of the foreman is a much more important one than appears to be generally admitted. If the foreman chosen is a strongly practical man and a good disciplinarian that is all to the good, but if he is of such a temperament that he opposes all innovations he will not be a success from the point of view of the management. Yet this is, too frequently, what happens. The opposition of the foreman to the new ideas originating from "above" is seldom open but, nevertheless, it exists. The men soon discover this and act in concert to abet their foreman in resisting innovations against which they, too, are prejudiced. The foreman may be got to acquiesce in the introduction of something new, but mere acquiescence is of comparatively little use. What is required is intelligence to perceive the new conception and ability to introduce it into the department; for in all such matters the foreman is the only effective go-between for introducing the ideas of the management to the men. It is as though the workmen spoke one language and the management another, the foreman being the necessary interpreter.

It follows, then, that the foreman must be capable of analyzing two different types of expension for, not only must he introduce the ideas of the management to the shop, but he must interpret the objections of the shop to the management. In many cases it happens that the management explains a proposal to the foreman; the foreman knows instinctively, from his life-long connection with the shop, that the proposal will not work; yet he cannot say why, and, consequently, offers a kind of grudging acceptance, which is of no use either to himself or to the management. What is required in this connection is a more analytical type of mind in the foreman. This, however, is seldom found in connection with the trade knowledge and powers of control also required for the post. — Engineering (London.)

It is well in all the trials of life to hope for the best, but to be prepared for the worst.

PULP AND PAPER NEWS

At the plant of the Abitibi Power & Paper Company, Limited, Iroquois Falls, Ont., last week the record time of 1 hour and fifty minutes for putting on a Fourdrinier wire, which was made some two or three years ago on No. 3 machine, was broken when the paper on No. 5 machine was on the reel just 1 hour and 35 minutes after the stock left the old wire. During that time the wire was put on, cleaned, started, and felts washed, and the paper taken over the machine. The actual putting on of the wire took just one hour and ten minutes, the remaining time being occupied in starting up, completing the washing of felts and taking the paper over. The wire crew was in charge of Boss Machine Tender Frank Stoughton. The crew on shift were Machine Tender Morns and Backtender Faler who were, of course, assisted by a regular crew.

The tug Reliance, of the Spanish River Pulp and Paper Company, which foundered in Lake Superior last December off the coast of Lizard Island, was brought to Sault Ste. Marie, Ont., last week by the tug Favorite of the Great Lakes Towing and Dredging Company.

E. Newall, head of the Dominion Envelope and Carton Company, Limited, Toronto, has returned to that city after a business trip to England. It is understood that Mr. Newall was successful in making satisfactory financial arrangements for the erection of a board mill in the Toronto district and that active steps towards carrying out the enterprise will shortly be commenced.

O. H. Moore, general manager of Hinde & Dauch, paper board manufacturers, Toronto, has returned from an enjoyable holiday spent in the Adirondacks and along the Maine Coast.

David Robertson, general manager of the Canada Box Board Company, Montreal, called on the paper trade in Toronto last week.

E. Pullan, president of the big concern bearing his name in the Toronto rag and paper stock field, has gone on a pleasure trip by motor through northeast Michigan and will visit Chicago before returning.

A. T. Brown, of E. Pullan, waste paper dealer, Toronto, and Mrs. Brown, together with W. B. Christie, of Hinde & Dauch, and Mrs. Christie, have left on a motor trip through the Adironacks.

The many friends in the paper trade of H. C. Woods, manager of Warwick Brothers & Rutter, manufacturing stationers, Toronto, will be pleased to learn that he is very much improved in health. He left, in June, on a business trip to England where he will look over the stationery field for new ideas in that line.

Many friends in the Toronto paper trade were pleased last week to greet Mr. Robson, who some years ago was with the old Buntin Reid Company, but who now is representing the Edinboro firm of Andrew Whyte & Co. Mr. Robson has been in Canada for a few weeks in the interests of his firm and booked some orders for the company's paper lines.

George Wilson of Winnipeg, President of the Canadian Paper Trade Association, was a business visitor in Toronto last week.

Montreal visitors to Toronto during the week were J. B. Larkin, manager of the Federal Paper Company: H. C. McFarlane, of McFarlane, Son & Hodgson, Limited: T. Havill, of the Havill Paper Company and T. B. Little of T. B. Little & Co.

"One Hundred Years Ago" is the title of a folder issued by the Canadian Export Paper Company, Limited. The first page, printed in three colors, gives a view of Trinity Rock, Saguenay River P. Q., and the second cuts of William Price, the founders of Price Bros. Limited, and of John Saxton, founder of the "Canton Repository." A reprint of the first edition of this paper is enclosed in the folder. A brief history of William Price in relation to the development of the lumber resources of the Province of Quebec, is also given. Mr. Price commenced operations on the St. Maurice River and the South shore of the St. Lawrence and extended his activities into the north by way of the Saguenay, where he became a leader in developing the forest lands.

The quarterly meeting of the Typothetae of America was held in Montreal on July 6, under the presidency of Mr. J. R. Henderson. Master printers from Montreal, Ottawa Toronto and Hamilton were present. The meeting discussed the sales tax and the best method of estimating costs.

By decision of Hon. Honore Mercier, Minister of Lands and Forests, the forest rangers' school which was created at the last session of the Legislature, will open on the 11th of September next at the Berthierville Government nursery under the direction of Henry Roy, forestry engineer.

The object in view is to form experts in dealing with forest fires, and generally with forest protection, and the school, to a certain extent, will be preliminary to the forestry school now operated under the auspices of Laval University in Quebec. The courses will be given in French and English and already applications have been received from 30 candidates for admission to the school showing the interest taken by forestry men, and by a number of large lumber firms, which are anxious to obtain the service of experts.

Last week a large number of representatives of paper companies visited Montreal and attended meetings of sections of the Canadian Pulp and Paper Association. Five meetings were held—the book and writing section, kraft service bureau, board section, coated book section, with a general conference of the Canadian Paper Trade Association.

The visitors included Messrs. H. F. E. Kent, Kinleith Paper Mills, Limited, St. Catharines, Ont; R. N. Finlay, United Paper Mills, Limited, Toronto; H. B. Donovan, Canada Paper Company, Limited, Toronto; I. H. Weldon, Provincial Paper Mills, Limited, Toronto, John Martin, John Martin Paper Company Limited, Winnipeg; John F. Taylor, E. B. Eddy Company Limited, Hull; George Wilson, Clark Bros & Co., Limited, Winnipeg; K. S. Maclachan, Lincoln Mills, Limited, Merritton, G. C. Winslow, Lincoln Mills, Limited, Merritton; T. Dickinson, Brown Bros. Limited, Toronto; F. H. Gage, Kinleith Paper Mills, Limited, St. Catharines, George Pauline, Ritchie & Ramsay Limited, Toronto.

Mr. I. H. Weldon was entertained at luncheon at the Ritz-Carlton Hotel on July 5, by the book and writing section, prior to leaving for England.

Mr. George Pauline has also left for a visit to the Old Country.

U. S. PAPER MEN ON CANADA'S PULP BAR.

New York Commenting upon the action of the Canadian Houses of Parliament limiting pulp exports from Canada, American pulp and paper men generally are disposed to complain that the immediate effect of such a law will be to boost the price of American paper $10 a ton. The legislation is viewed in some quarters as an attempt to give Canadian labor the wages now earned in the United States by making the pulp into finished paper. That, it is said, will close many American paper mills, throwing thousands of mill operatives out of work. Although the pulpwood exported from Canada is only 20 per cent. of the United States' supply, it is held that this 20 per cent. is the controlling factor in the market, and its elimination would result in an abrupt skyrocketing of prices.

While formal action is withheld pending the consummation of the embargo legislation, officials of the United States Tariff Board are understood to be watching the situation with particular interest, and already discussion is centred in the steps which could be taken to bring about a nullification of the step.

Prospects of an interchange with the Canadian Government, with the possible development of tariff retaliation on her imports of coal and other necessities are looked for. Such steps as may be undertaken by the United States however, will be held in abeyance until the new Canadian legislation becomes a definite law through the affixing of the Governor-General's signature, but it is the confident belief that such a step will be followed almost immediately by a protest from American paper manufacturers, which will be given formal recognition by both the State Department and the Tariff Board.

The embargo, if carried out, is not likely to affect the International Paper Company as seriously as other American newsprint mills, due to its extensive woodland holdings in the United States. Asked what the International would do in case the embargo becomes effective, and the Canadian newsprint mills are enabled to control the American market, President Philip T. Dodge said, "If we are not allowed to do business profitably, we will turn to other grades of paper which can be produced at a profit, and we will sell current from our water power developments."

A strong telegram has been sent to the Secretary of State by Representative Luther W. Mott, Watertown, N. Y., urging the filing of a protest with the Canadian Government. Mr. Mott pointed out in his wire to Secretary Hughes that, should the proposed embargo become effective, many mills in Northern New York which now depend almost entirely for their operation upon Canadian pulpwood would be forced to close and thousands of their employes thrown out of work. This is particularly true, he said, since pulpwood from Crown lands in Canada has been prohibited from export since 1910. Congressman Mott told Mr. Hughes that should the resolution be passed hostile feeling was sure to result on this side of the border. The congressman said that he intended to take the matter up with the United States Senator, J. W. Wadsworth.

DEVELOPMENT SCHEME IN LAKE ST. JOHN DISTRICT

In our last issue we printed the impressions of a visitor to the Lake St. John, P. Q., district, where the Quebec Development Company is carrying out a vast development scheme which will have an important bearing on the pulp and paper industry. A party of those interested in that work and also in the pulp and paper industry recently inspected the work. The party consisted of Messrs. J. Leonard Apedaile, managing director of Price Brothers & Company., F. R. Thorne, manager of the paper sales department of that firm; R. Crooker, Canadian Export Paper Company, Limited; A. L. Dawe, Canadian Export Paper Company Limited, and C. R. Van de Carr, Laurentide Company, Limited. Starting from Quebec by boat, the party was met at St. Alphonse by Mr. G. W. Mitchell, in charge of the operations at Kenogami, and Mr. R. Greig, superintendent of Price Brothers paper mills at Kenogami. The party motored to Chicoutimi, where the members were welcomed by Mr. M. R. Kane, Manager of the Woodlands Department, and Mr. E. J. Flynn, comptroller at Chicoutimi. After an inspection of the new power dam at Chicoutimi, the party continued to Jonquiere, where it was joined by Mr. Arthur Price. The Price Bros. mill was inspected, the visitors also looking over the extension, which when completed will nearly double the capacity of the plant. The foundations are practically completed and the moulds for the concrete superstructure well advanced.

From Jonquiere the party motored to Lake Kenogami, and witnessed part of the work being carried out by the Provincial Government to transform the Lake into a storage basin. At St. Joseph D'Alma the party was joined by Mr. Marshall Ball, superintendent of the Jonquiere Paper Mill. The journey was then made to the scene of the power development at the Grand Discharge of the Saguenay. A 12 mile line is now being completed from Hebertville on the C.N.R. which will permit of the heavy equipment being transported.

The fork of the Grand and Little Discharges of the Saguenay form the Island of Alma on which the construction camp is situated and that the smaller Ile Maligne is formed by a similar forking of the Grand Discharge itself. The main dam for the development of power is to be situated on the larger branch of this latter fork, just above its confluence with the lesser branch and a secondary dam for retention purposes will later be constructed across the lesser branch at the upper end of Ile Maligne.

The rail line from Hebertville is expected to be ready for operation in another month or six weeks, but the exact time depends upon the completion of a bridge across the lesser branch of the Grand Discharge on the site of the main dam. This bridge is 400 feet in length, with double track width, and two piers and as many abutments of concrete construction are in place, ready for the steel work which is to commence immediately. An important feature of the rail line is another bridge across the Little Discharge, 650 feet long and having eight spans, which is already finished.

In order to permit of work upon the main dam, the waters of the larger branch of the Grand Discharge have been placed under control by means of a cofferdam, the largest of its type ever built with the result that the full force of the stream has been diverted for the time being into the lesser branch. The main dam, in which will be situated the power house, will rise more than 100 feet from its foundations and will have the effect of elevating the waters of Lake St. John some 23 feet above their normal level. This means, that they will be permanently maintained at their average spring-flood level. The level of the Saguenay River will however, remain undisturbed.

INSTITUTE ITEMS

WHAT MUST I DO TO MAKE GOOD?

Several years ago the Director of Publications of the LaSalle Extension University, of Chicago, propounded the following question of Dean Thomas A. Clark of the University of Illinois:

"Suppose a young man, ambitious and really in earnest, came to you and asked for five minutes of your time that you might express to him in the fullness of your thought and experience, an answer to the eternal question of the young man 'What must I do to make good?'' If you believed the young man to be sincere in his desire to secure and use helpful advice, what would you tell him?''

For the benefit of those who may never have heard of Dean Clark and his work, the following may be said about him: Thomas A. Clark was the first Dean of Men in the country, and he has been working with undergraduate problems at the University of Illinois for more than twenty years. His phenomenal success as a disciplinary officer has been due to his clear-sighted knowledge of youthful human nature and to his regular personal contact with thousands of students. Having seen generations of students succeed or fail, he knows perhaps better than any other man in the country the elements that contribute to success or failure in college. The same elements may be applied to almost any young man, whether he is a college student or one of the less fortunate, just starting out on Life's broad highway.

The article printed below is Mr. Clark's answer to the question asked him — "What must I do to make good?'' The article is copied from the Personal Efficiency magazine, published by the LaSalle Extension University. Read over the answer carefully, and see if you cannot pick out some things which may be made good use of in YOUR efforts to "make good.''—The Editor of *Mead Co-operation.*

"What would I say, I am asked, to a young man, ambitious and in earnest, who should come to me and ask me in five minutes to answer the question, "What must I do to make good?''

I do not now recall many of the specific things I learned in college, but that matters little, for it was in the learning that my mental development came, but I do remember one thing impressed upon me by an instructor whose influence I count among the most helpful I have ever known. "You can buy anything from the gods,'' he used to say, "if you are willing to pay the price.''

And what is the price of success? I have watched the progress and the development of a good many thousands of young men since I entered college more than thirty years ago, and I have seen not a few of them succeed. I believe I know the answer.

It goes without saying, that if a man is going into any business or profession that his chances of success are dependent pretty directly upon the character and extent of his education and his preliminary training. No matter how old he is a man should give himself the most thorough theoretical education within his reach before entering upon any business or profession. To do otherwise is to handicap himself for life.

No man is likely to succeed in any business or profession who is not willing to work hard. Most young fellows do not object seriously to hard work if it is something they like or that they find interesting or easy of accomplishment. The straight level paved road they make no objection to, but when they strike a muddy hill where they must bend every effort to the load, they hang back. The task that is difficult, or unpleasant, or uninteresting, they shrink from. If success means continuous hard work, they are often unwilling to pay the price.

I have just finished reading the autobiography of Andrew Carnegie, and I found it an intensely interesting narrative. Few will doubt that Mr. Carnegie succeeded, for he was a great man as well as a wealthy one, but the strongest impression the book makes on me is the recollection of how persistent, how tireless, how faithful he was in the performance of any work assigned to him. He never spared himself, he never complained at working overtime, he never thought any task too hard of accomplishment, and his point of view in this regard has been quite general in all men whom I have known to succeed.

If a man would make good, he must have character. Shrewdness, unscrupulousness, trickery, may easily win for a time, but in the end a man will not get far unless he is honest, dependable, and trustworthy. Not long ago I asked a prominent man at the head of the financial affairs of one of the largest manufacturing corporations in the state of Illinois how he came to be in his present position.

"I have one quality,'' he said, "which has put me and kept me where I am. I am absolutely honest. My word can be depended upon.''

Persistence, determination, backbone are necessary to success. The man who changes his purposes at every cross road seldom succeeds. One must stick to a job until it is finished. If he makes a plan he must carry it to completion. Success does not always come quickly, but it comes surely if we plug away.

One of the most honest, hard-working, and intelligent men I have ever known is seventy years old now, and he has reached nowhere. And the reason is that he has stuck to nothing. He has lived in a dozen states, he has taken up as many different lines of work, but every time he has shifted from one thing to another he has lost ground, and in a certain sense he has lost confidence in himself until it is too late for him to arrive.

And this leads me to another point. A man must believe in himself if he would succeed; he must have confidence in his own ability to solve a difficult problem, to finish a task, to do a job or work that he has perhaps never done before or perhaps that nobody has ever done before. He must be willing to take responsibility and to do whatever comes to his hand whether it seems exactly his job or not, for in doing this he will make himself a man whose place it will be difficult to fill.

Lack of Safety is Lack of Sanity.
Knowledge of Danger is the First Step to Safety.

A Safeguard on Machinery prevents accidents.
Let us also put a Safeguard on our actions.

UNITED STATES NOTES

According to a Treasury decision announced last week, entries of Canadian pulpboard in rolls for use in the manufacture of wallboard, which have been liquidated on the basis of the Canadian rate of 25 per cent ad valorem, may be reliquidated at the rate of 5 per cent. ad valorem under paragraph 1402 of the Fordney-McCumber tariff act with a refunding of the excess duty. This ruling amends a decision of Feb. 2 of the present year, in which it was stated that the Canadian rate of duty on the kind of pulpboard mentioned was 25 per cent prior to January 15, 1923. The decision says that the Canadian Minister of Customs and Excise has stated that there is no record of any importation from September 21, 1922, on the midnight of which the present tariff act went into effect, to January 15 of the present year, of the pulpboard in question and that had there been the material would have been admitted free of duty into Canada, or had there been a duty assessed it would have been no higher than 5 per cent.

Mrs. Frederick G. Crane, widow of the late Mr. Crane, head of the Crane family, paper manufacturers of Dalton, has made gifts of $25,000 each to the Massachusetts Agricultural College, Phillips Academy at Andover and the House of Mercy Hospital at Pittsfield. Mr. Crane made no public bequests in his will, but his family is now carrying out his wishes in that regard.

Expenditure of $716,724 of Forest Road funds for construction work in Colorado and Idaho has been approved by Secretary of Agriculture Wallace.

The Board of Directors of the International Paper Company have declared a regular quarterly dividend of one and one-half per cent. on the preferred capital stock of the Company, payable July 16 to preferred stockholders of record at the close of business July 6th.

Exports of paper and paper products during May, according to figures compiled by the Department of Commerce, made a very good showing. Their total value was but $7,000 short of the figure for March, which has so far been the high water mark for the present year. Paperboard, strawboard and the unspecified group showed decided increases in value and tonnage, as compared with the preceding month. Book paper registered an increase in value and also in tonnage. Newsprint declined both in quantity and value, as compared with last year, but showed a slight improvement over April of this year. Wrapping paper and writings made an unfavorable showing.

The Forest Service, Department of Agriculture has two large timber sales pending. One of these involves about 2,000,000,000 board feet of pulpwood in Alaska. Bids will be received on this by the district forester in Juneau up to July 31. The prospects that this timber will be sold and a pulp mill established are reported to be very good, the department states. The second sale pending involves about 121,000,000 board feet of the sugar and yellow pine type on the Plumas National Forest in California.

B. W. Scribner, chemist of the West Virginia Pulp and Paper Co., has been named by the Bureau of Standards as successor to F. A. Curtis, chief of the paper laboratory of the bureau. Mr. Curtis' resignation became effective July 1. Mr. Scribner will assume his new duties in Washington about the middle of this month.

Increase of 5 per cent. for standard newsprint paper and 7 per cent for total newsprint comparing May 1923 with May 1922, are shown in production statistics compiled by the Federal Trade Commission. The average price for the month in carload lots was $3,957 per cwt. Groundwood production, comparative statistics covering the same period, totalled in all grades 371,499 net tons in May, 1923, as against 331,694 net tons in 1922. This total exceeds all others for the month recorded since 1919. The total production of all paper in May, as compared with the same month of the previous year showed an increase of 69,054 tons, and a gain of 13,602 tons over May in the record year, 1920.

Following his return last week from a business trip to Canada, R. S. Kellogg, Secretary of the News Print Service Bureau, left for a tour of inspection through mills en route to Wisconsin, combining business with pleasure on a seven weeks' automobile jaunt on which he is being accompanied by Mrs. Kellogg.

Another sojourner in Wisconsin is Dr. Hugh P. Baker, executive secretary of the American Paper and Pulp Association, who is spending a two weeks' vacation in a Wisconsin camp.

Walter E. Lindell, Roy McCorkindale, Edward E. Bogart and William Turner, old employees, are conducting the mill supply business of Chase and Cooledge, Holyoke. Of the founders, Mr. Chase died several years ago, and Mr. Cooledge, who is long past the usual retirement age, decided to sell out to the men now in control, all of whom have served the firm for many years since its founding 50 years ago.

Three decisions, one in favor of W. R. Hearst, and one in affirmance of the Dexter Sulphite Pulp and Paper Company in the $3,500,000 suit brought by the latter against the publisher, were handed down a week ago in the Appellate Division of the Supreme Court, Rochester, N. Y. The suit is for recovery under a contract made by Hearst to purchase the company's mills and counter suit brought by Hearst to rescind the contract on the ground of fraud. Action of a lower court refusing a demurrer asking dismissal of the company's complaint in Jefferson County was upheld by the Appellate Justices. Hearst's attorneys are granted leave to file an answer to the company's suit within twenty days. The lower court was reversed in the matter of consolidating the publisher"s countersuit with the issue raised in the suit instituted by the company. It was ruled that the reversal must be tried in New York City. An order denying the company injunctive relief restraining Hearst from trying the New York counter suit until after determination of the Jefferson county action was affirmed.

A loss put at $200,000 was sustained in the fire recently which seriously crippled the sulphite mill of the Carthage Sulphite Pulp and Paper Company at Carthage, N. Y., and which for a time, also threatened the near-by plants of the National Paper Products Company and the Ryther and Pringle machine shops.

The mill following a shut down of several months, was in readiness to resume operations when the fire, whose origin is unknown, broke out. About 100 men had been engaged for work beginning July 2, and a daily output of 50 tons of pulp was anticipated. Until the directors of the company can meet it will not be decided whether to rebuild.

The Markets

CANADIAN TRADE CONDITIONS

Montreal July 10.—The increased activity which characterized the local paper market during the last week of June has been maintained. While there is no rush, the volume of orders is on a satisfactory scale, taking into consideration this season of the year, when it is expected that sales will decline. The printing business is slow, and there are again complaints of excessive competition for the available orders.

From paper to agriculture seems a far cry, but as the latter is the most important of all Canadian industries, its prosperity or otherwise has a material bearing on all others. In the Province of Quebec, the season is backward, but with promises of generally fair crops, the hay crop will be a large one, and the condition of grain is favorable. Farmers, however, are not able to secure very remunerative prices for their cattle. In the agricultural districts collections are slow, and travellers state that retailers are not buying extensively.

The demand for newsprint is still good, but there is really no change in the situation. Should Australia and Canada conclude an agreement for a preferential tariff a stimulus will be given to our exports of newsprint to the Sister Dominion. Canadian mills have been out of the Australian market for some time, for two reasons — competition there is very keen and our mills are handicapped by the preference given to British goods, and besides that Canada has been able to find an outlet for her newsprint in the United States at prices which give a fair profit. With a preference however, our mills would no doubt make efforts to secure a portion of the business.

In the paper stock department, white rags are in good demand, with prices firm; waste paper is commanding a good sale at steady prices. The call for roofing felts is very good, orders coming in very freely. Some business has been refused on account of inability to fill them. Other lines indicate moderate activity with, however, no special features.

The pulp section is unchanged. There is no further news from Sweden, but it is recognized that if the trouble there continues for any length of time it is likely to cause a rise in pulp prices. Groundwood is again in good request at very firm prices, and with practically no surplus. Kraft maintains its value, while bleached sulphite is steady at unchanged quotations.

Imports into the United States of all classes of pulp show considerable increases this year, Canada securing a substantial share of the higher tonnage. For the four months of the year, up to the end of April mechanical pulp imported totalled to 3,382 tons, of which 72,263 tons came from Canada; in 1922 the total was 54,280 tons, Canada sending 47,710 tons. In unbleached sulphite this year the United States took 181,042 tons, 64,804 being of Canadian manufacture, while in 1922 we contributed 45,515 tons out of 1,264,444 tons. The imports of unbleached sulphate were 76,269 tons, of which Canada sent 46,849 tons; in the corresponding four months of last year the total was 75,646 tons, Canada contributing 46,018 tons of this amount.

ONTARIO MARKET NEWS

With many of the buyers away and the holiday season in full swing the Ontario pulp and paper trade is experiencing its usual summer dullness and in some quarters this is adjudged to be rather more pronounced than usual. It is pointed out that the paper jobbing trade had not recovered from several weeks of rather bad business when the holiday season came on and the two periods coming together has made a somewhat protracted season of backward business. Paper manufacturing also, with the exception of newsprint and book paper for the publishing trade, is somewhat lighter in volume at the present time than it has been for some time. For instance the concerns manufacturing box and other board are only running at about eighty per cent capacity. Enquiry among the manufacturing stationery firms reveals the fact that business at the best is very spotty and that there has been a falling off in the blank book business and in most lines of stationery. Some of these firms, however, are also engaged in book publishing and this branch is stated to be furnishing a fair volume of business. The envelope trade, which until a few weeks ago, was good, has fallen off and only a fair amount of paper is being used for envelope manufacture at the present time. For the most part these adverse conditions are taken to be seasonable. They are not confined to the paper trade but are touching practically every branch of industry. That the paper trade is sound basically it is generally agreed while the further conviction is held that following a brief period of more or less marking time the end of the holiday season will see greatly increased activity in all lines of paper.

There have been rumors of a drop in box board but this has not been officially announced as yet. There is a close relationship between the price of box board cuttings and the product itself and with a considerable drop in price of the former it is predicted that history will repeat itself and the price of box board drop also. It is a fact that the two usually go together. Box board cuttings to the mill are now quoted at $19.00 per ton. Purchasing agents in the box board industry say that things are shaping up for a fairly busy season but in the meantime the paper box trade is holding off buying in view of a possible drop in price of board. The paper box making trade has picked up slightly although some of the firms are still complaining of a shortage of orders in some lines of boxes.

Although for the most part prices on various paper lines are holding as yet, there have been one or two minor changes, the character of which hardly foreshadows any drastic changes. For instance Toronto jobbers were notified during the week by a couple of the paper manufacturing firms of a drop of one cent a pound in one line of bond paper and a raise of half a cent a pound in the prices of book and litho paper. These slight adjustments have followed the action of one or two of the mills taken a couple of weeks ago in withdrawing their price lists.

RAG AND PAPER STOCKS.— Waste paper dealers report a considerable falling off in collections but for all that there is no great demand for stock from the

paper mills. The latter, while drawing on their present reserves, still appear to have some stock left and are not sending in any heavy requisitions to the collectors. Some of the book mills are stated to be handling fair quantities of waste paper. In the rag market there is a fair demand for cotton cuttings.

TISSUES AND TOILETS.— Some lines in tissues and toilets are showing satisfactory activity according to mill representatives. This is the season for specialty lines and there is a big movement in paper napkins, towels and other specialties. Plants are running practically full time. Standard lines of tissues, however, are rather quiet, although prices are holding firm and manufacturers are anticipating an early return to better business.

NEW YORK MARKETS

New York, July 7 — (Special Correspondence) — The latest Federal Trade Commission report, covering the month of May, shows that the paper manufacturing industry in the United States is not only in a far from dull position but that mills of the country operated in that month at far above normal capacity. Production of paper of all kinds in the U. S. in May totalled 659,025 net tons, which represents the largest single month's output in any month in more than a year and a half with the single exception of last January. Moreover, May paper production was something more than 116,000 net tons in excess of the average monthly output over the past five years, thus showing that the paper industry in this country was in May and probably still is in a very active position.

May production compares with 605,490 net tons produced in April this year, 442,601 tons (minus paper board and bag paper output) in March, 614,364 tons in February, and 664,537 tons in January, and also is contrasted with 589,971 net tons produced in May a year ago, 383,995 tons in two years ago, 645,413 tons in May three years ago, 480,171 tons in May four years ago, 538,416 tons in May five years ago, and an average monthly output over the last five years of 542,958 net tons.

Mill stocks of paper and board increased somewhat during May. At the beginning of that month mills of the country held a total of 231,381 net tons of paper of all kinds, whereas at the end of May stocks amounted to 245,872 net tons, showing a gain of about 14,000 net tons. Since production jumped more than 53,000 net tons over the April output, however, it will be seen that manufacturers shipped out the great bulk of their increased production during the month. Furthermore, mill stocks at the close of May were but slightly in excess of the average mill holdings of 230,217 net tons over the past five years.

All signs point to a very good movement of paper of most kinds into consuming channels. There is, of course, some lull in the demand at present, as is invariably the case at this season of the year. Consumers are not so willing to buy except to cover actual and immediate requirements during the summer, and manufacturers of paper obviously have experienced some recession in the call for their product. However, aggregately the movement thus far this summer probably has established a new high record of business in paper for this time of the year. The tremendous demand for newsprint, the consistently good consumption of book paper, the better than average demand for fine papers and for other grades serve to make a much livelier market than is ordinarily experienced at this season. Mills, it is true, have curtailed their operations to some extent during the past few weeks; this is the usual custom at the half-year mark when inventories must be compiled and when repairs are made to machinery, but indications are that, taken as a whole, the paper mills of the country are today working at a better rate of capacity than usually at this time of the year.

A strong market continues to prevail for newsprint. A little drop in consumption in the past few days has been noted, using the New York newspapers as a criterion. The department stores have let down in their display advertising to some extent, particularly in the Friday afternoon dailies owing to the closing of stores all day or half day on Saturdays, and it also has been noticeable that other advertising has decreased, so that publishers have cut down the number of pages printed in some issues. This is purely a seasonal condition, however, and no effect whatsoever is observable on the news print market. Prices rule firm and mills are shipping out their product regularly and are readily finding buyers for any surplus they have to dispose of.

Book papers continue fairly active and firm in price. Fine papers are in comparatively good demand; perhaps individual orders lack the volume of busier times but there is nevertheless a steady movement, and quotations are fully maintained. Coarse papers are in rather slow demand yet manufacturers are reported to be well fixed with back orders which keep them occupied.

Box boards are moving in a routine way and in normal amounts. Buyers are hesitant about ordering other than supplies directly needed but boards nevertheless are enjoying a fairly good demand. Prices have held steady this week at about $60 per ton for news board f. o. b. New York and $57.50 for plain chip.

GROUND WOOD.— The Federal Trade Commission's report on the wood pulp industry which shows that no less than 33,000 net tons more ground wood were produced in the United States in May than in April about explains the prevailing market position of this commodity. Grinders are operating on a larger scale at present than since last summer, and there is no doubting that mill stocks are accumulating, thereby creating some easiness in prices. However, it is customary for manufacturers to pile up a surplus of ground wood during the early summer to last them over the dry spell that develops later in the year, and while it is true there is some willingness shown at present to shade asked prices to secure orders, producers are not pressing matters and are maintaining market levels fairly well. Most domestic grinders want around $35 a ton at producing plants for prime spruce ground wood for prompt shipment, and it is stated that the bulk of current business is at about this price basis.

Ground wood production in May reached a total of 187,908 net tons. Mill stock increased during the month — from 86,924 net tons at the beginning of May to 126,234 tons at the end of the month — not quite 40,000 tons again.

CHEMICAL PULP.— Reports continue to tell of a limited demand from paper mills for chemical pulp. Consumers evince little disposition to buy other than pulp immediately required, and while a fair business of spotty character is transpiring, the volume of sales is small. The price tone holds steady. There are some sellers who apparently are granting slight concessions to secure orders but the tone nevertheless is steady and no concerted pressure is being exerted on the market by those on the selling side. Instead confidence among importers and dealers is quite pronounced, nearly all of them anticipating a livelier and higher market in the not distant

future when paper makers commence to cover their fall requirements. A bullish factor is that there is not much pulp held unsold by sellers at present, importers in particular. Offerings by manufacturers in Scandinavia recently have been of limited tonnage owing to the scarcity of pulp there and the good demand from European consumers, and importers here probably have less stock on hand than in a long time, so that they can afford to be more or less independent with regard to prices.

No news has been received this week concerning the strike of workers in the Norwegian pulp and paper mills, and the strike is believed to still be in effect. Negotiations are proceeding but apparently the difficulty is not being smoothed over as quickly as it was thought at first it would be.

RAGS.— A stiffening of prices on the low grades of papermaking rags, especially those used by roofing paper mills, has served to improve the tone of the market for all grades of rags. Dealers are firmer in their attitude and are generally holding out for the prices desired, and there is a distinct tendency noted in prices to advance. Roofing stock has sold this week at 1.40 cents a pound f. o. b. New York for No. 1 packing and 1.20 cents New York for the No. 2 grade, these prices representing a rise of between $3 and $4 a ton from the recent bottom levels touched by the market. Old white rags incline higher, as do thirds and blues. New cuttings are about steady though it appears that the recession in prices has been definitely checked, dealers being satisfied, it would seem, to wait out the market in expectation that demand from mills is about due to expand. There is a great deal of talk in the trade anent a scarcity of rags, the contention being that low prices have led to curtailment of collection and that incoming supplies from country sources do not begin to approximate normal quantities.

PAPER STOCK.— The market for old paper is gradually assuming a firmer undertone and prices at the moment display more steadiness than has been noted in several months. No actual advances of note have been recorded but most grades are fetching full current market levels and dealers seem altogether averse to accepting orders at cheaper prices. It is claimed that available supplies are light, the low prices recently obtaining having retarded collections considerably, and for this reason dealers are hesitant about entering selling engagements involving large amounts of material even when given the opportunity to do so.

Quotations on No. 1 hard white shavings range between 4 and 4.25 cents a pound f. o. b. New York, and on No. 1 soft white at from 3 cents upwards. Old magazines are quoted by New York dealers at 1.65 cents a pound f. o. b. this city for heavy No. 1 books though it is understood dealers in other parts of the country are asking much higher prices. Old kraft paper is firmly quoted at 2 cents a pound New York, ledger stock at 1.90 cents, and white blank news cuttings at 1.85 cents. Folded newspapers are selling at 82½ to 85 cents a hundred pounds f. o. b. New York, and No. 1 mixed paper at 70 to 75 cents.

OLD ROPE AND BAGGING.— Demand for old manila rope continues comparatively quiet. Some paper mills seem ready to buy rope at a price but they are not anxious for supplies and the prices bid frequently prevent business from going through. Dealers quote between 5.75 and 6 cents a pound at shipping points for No. 1 domestic manila rope, and importers want about the same prices for foreign manila rope. Old bagging is in slow demand and is quoted at 1.15 to

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AND

Finnish Wood Pulp Union
Helsingfors, Finland

1.25 cents a pound f. o. b. New York for No. 1 scrap burlap, and at 80 cents a hundred pounds New York for roofing bagging.

NEW ONTARIO INDUSTRY

The following item is a despatch from Toronto to a Montreal paper. The writer of it is evidently unaware of a very large and important kraft mill of the Dryden Pulp & Paper Co. at Dryden, Ont. The Pulp and Paper Magazine is glad to see further development of this branch of the industry.

With the letting of tenders over the week-end for tim ber cutting rights on 1,040 square miles of territory in the Sudbury and Algoma districts, a brand new industry is heralded for Northern Ontario. The Continental Wood Products Company, Limited, of Montreal and Elsas, Ont., is the concern which has accepted the Provincial Government's terms in the new venture of manufacturing kraft paper for wrapping and box-making purposes, and in the agreement they undertake to have a $1,500,000 pulp mill in operation by June 1, 1925 and they may later be called upon to construct a paper mill.

The limits disposed of are known as the Trout Mills-Chapleau pulpwood limits, and, according to the departmental statement, the prime object in the transaction is the establishment for the first time in Ontario's history of a kraft papermaking industry.

By contemplating someone better than ourselves, we can be inspired to grow like him.

TO THE MOSQUITO

(*Genuine apologies to Barbauld*)

Fly! I know not why thou art—
But know that thou and I must part:
And why on earth we ever met,
I own to me's a secret yet.
Fly! we've been too long together,
Through pleasant and through cloudy weather.
Tis time to part, my duty's clear,
I'll have to swat thee now, I fear;
For God's sake, go! I give thee warning.
Don't choose thy time:
Bid me GOOD NIGHT,—and in some other clime
Buzz thy GOOD MORNING.

J. C. M.

ITALIAN ARTIFICIAL SILK PRODUCTION

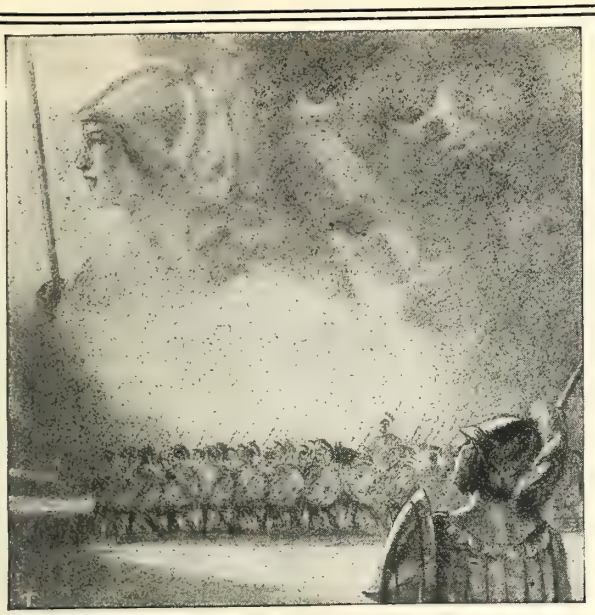
Italian production of artificial silk during the fiscal year ended June 30, 1922, approximated 2,500 metric tons, with a value estimated at 150,000,000 lire. Italy has four artificial-silk factories, employing about 10,000 workmen and having a capacity of more than 3,000 metric tons annually. Two new mills are soon to enter the field. About one-half of the entire Italian output of artificial silk is exported, which would make the annual consumption of Italy between 1,200 and 1,500 metric tons. Local demand is said to have tripled in the last 10 years, and the tendency is to increase still further. U. S. Commerce Reports.

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—Theodore Roosevelt

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One of the important features will be the presentation of ways and means to enhance labor productivity. The utilization of waste products will also be given special attention.

Exhibitors are making elaborate plans to have this year's exhibit surpass any showing made during previous years.

For further information address National Exposition of Chemical Industries, Grand Central Palace, New York



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Buyers who are unable to find in the classification here given such machinery or supplies as they desire are invited to write Service Department, Pulp and Paper Magazine, Gardenvale, Que., who can, in all probability, refer them to proper sources.

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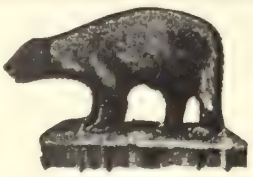
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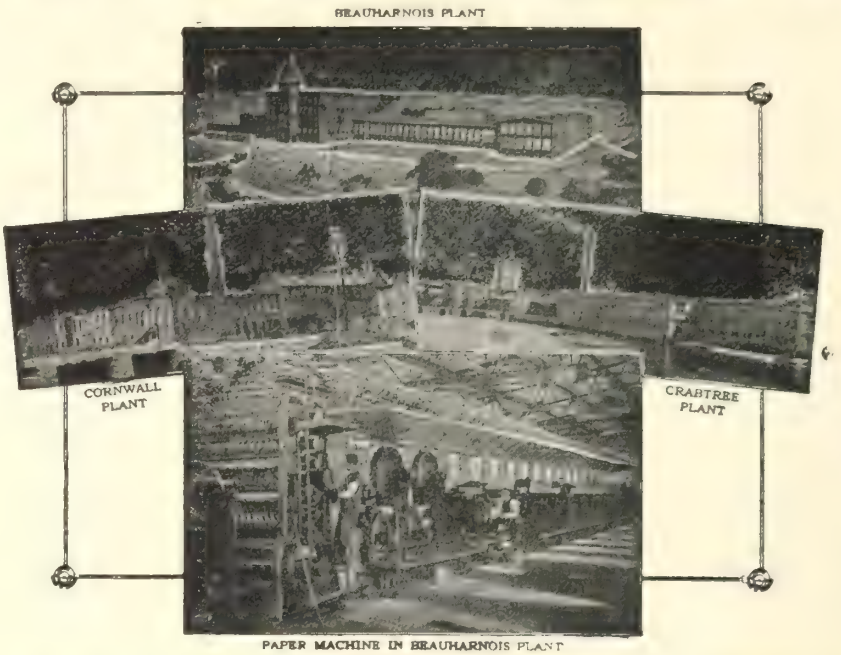
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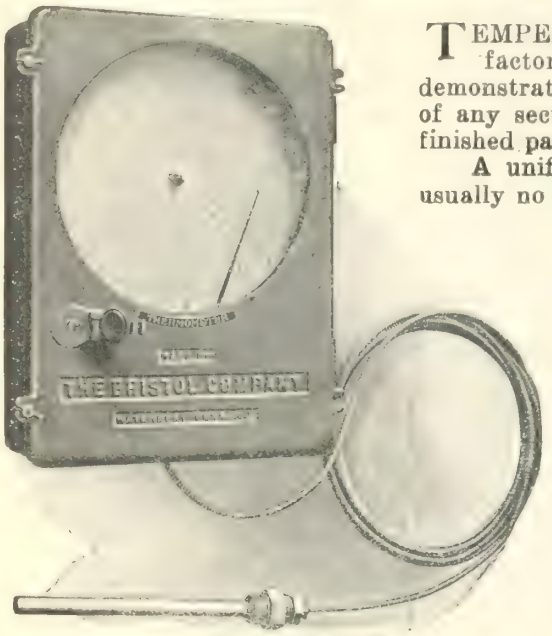
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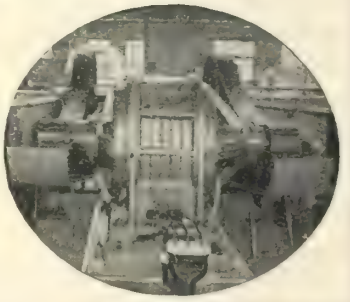


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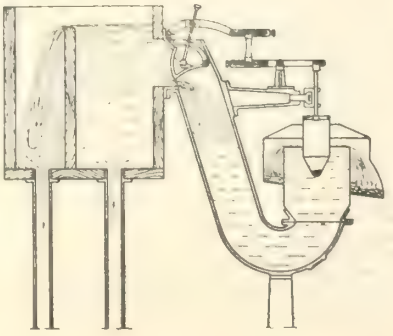
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Waterous Engine Works, Co., Ltd.

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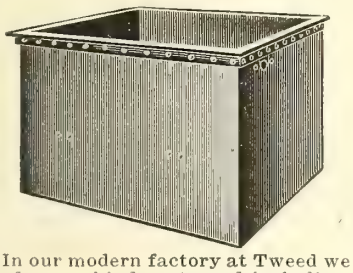
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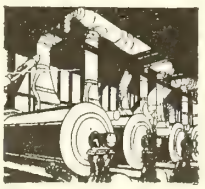
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ALPHABETICAL LIST OF ADVERTISERS

See Classified List on Page 73.

Unpaged advertisements appear in every other issue.

A

Alberene Stone Co., Ltd. 84
Abitibi Power & Paper Co. Ltd. .. 74
Acer, J. A. H. & Co., Ltd. 24
American Volth Contact Co., Inc. ..
American Stone Co. 24
American Woodpulp Corporation .. 11
Ayers. Limited .. ..

B

Babcock & Wilcox 4
Barrett & Co., Ltd., The 82
Barber, W. J. & Co., Ltd. 25
Bathurst Company, Ltd. 28
Bates & Innes, Ltd. 82
Bemis Manufacturing Association ..
Bertrams, Limited .. ..
Belgo Paper Co., Ltd., The .. ..
Beveridge Supply Co., Ltd. .. ..
Black-Clawson Co., The .. ..
Boivin, Louis 26
Bolton, John W. & Sons, Inc. 18
Boving, Hydraulic & Engineering .. 80
Company, Ltd. 82
Bristol Co., The .. ..
Brompton Pulp & Paper Co., Ltd. ..
Burgess, E. T. .. ..

C

Canada Foundries & Forgings, Ltd. 72
Canada Metal Co., Ltd. 21
Cameron Machine Co. 3
Canadian Combustion Co., Ltd. 18
Canadian Barker Co. 7
Canadian Des Moines Steel Co., Ltd. 23
Canadian Elixman Co., Ltd. 19
Canadian Equipment Co., Ltd. .. ..
Canadian Fairbanks-Morse Co., Ltd. 32
Canadian Ingersoll-Rand Co., Ltd. ..
Canadian Johns-Manville Co., Ltd. .
Canadian Mead-Morrison Co., Ltd. ..
Canadian Link- Belt Co., Ltd. .. ..
Canadian Milk Products, Ltd. .. ..
Canadian Nashua Paper Co., Ltd. .. 86
Canadian Paperboard Co., Ltd. 24
Canadian Pipe Co., Ltd. .. ..
Canadian Robert Dollar Co., Ltd. ..
Canadian Sirocco Co., Ltd. .. ..
Canadian SKF Co., Ltd. .. ..
Canadian Vegetable Parchment Co., 74
Limited 10
Canadian Vickers, Ltd. 21
Canadian Westinghouse Co., Ltd. .. 26
Capital Wire Cloth & Mfg. Co., Ltd. 22
Carey, Jas. L. .. ..
Christie, George, Ltd. .. ..
City of Hull .. ..
Clayton, Neil & Jones, Ltd. .. ..
Combustion Engineering Corporation
Limited .. ..
Crane, Ltd. .. ..
Crittsinger, Burt Co., Inc. .. ..
Cleveland Stone Co., The .. ..

D

Date, John .. ..
Dept. of Lands, Forests & Mines 9
Ontario .. ..
Dodge Mfg. Co. of Canada, Ltd. ..
Dominion Belting Co. .. ..
Dominion Engineering Works, Ltd. 19
Dominion Oxygen Co., Ltd. .. ..
Donnacona Paper Co., Ltd., The .. 24
Don Valley Paper Co., Ltd. The 24
Downingtown Mfg. Co. 25
Dryden Paper Co., Ltd. 24
Dunlop Tire & Rubber 30
Dunham, C. A. Co. .. ..

E

Elixman Paper Core Co., Inc. 19
Elk Fire Brick Co. of Canada, Ltd. 30
English China Clays, Ltd. .. ..
Engineering & Machine Works of
Canada, Ltd. .. ..

F

Ferguson, H. S. 22
Ford, J. & Co. .. ..
Foundation Co., Ltd. 22

G

Galt Knife Co., Ltd. .. ..
Garden City Paper Mills, Ltd. 74
Geigy Co., Inc. 27
Goldie & McCulloch Co., Ltd. 89
Goold, Shapley & Muir Co., Ltd. ..
Gottesman, M. & Co 29
Graselli Chemical Co., Ltd., The ..
Graton & Knight Mfg. Co., Ltd. .. 69
Griswold & Co. 23
Gutta Percha & Rubber, Ltd. .. ..

H

Hamblet Machine Co. .. ..
Hamilton, Wm. Co. of Canada, Ltd.
Hamilton Gear & Machine Co. 87
Hans Renold of Canada, Ltd. .. ..
Hardy, George F. 22
Harland Engineering Co. of Canada, 1
Limited .. ..
Hay Knife Co., Ltd., Peter 28
Hendrick Mfg. Co. 17
Hercules Powder Co. 78
Holliday, . B. & Co., Ltd. 86
Huestis, A. M. 2
Hydraulic Machinery Co., Ltd. .. ..

I

Industrial Engineering Co., Ltd. ..
International Business Machines Co., 23
Limited. 27
International Pulp Stone Co., The 20
Interlake Tissue Mills Co., Ltd. ..

J

Jenkins Bros., Ltd. 17
Jenssen Co., G. D. 23
Johnson Wire Works, Ltd., The .. 30
Jones & Glassco, Regd. 89

K

Kalbfleisch Corporation, The 86
Kander Paper Stock Co., Ltd., The 24
Kenwood Mills, Ltd. 13
Kimball, Herbert S. 22
Kingsbury Machine Works .. ..
Klipstein, A. & Co., Ltd. 16

L

Lacey, James D. & Co. .. ..
Lagerloef Trading Co. 67
Langston, Samuel M. Co. 27
Laurentide Co., Ltd. 84
Lawrence Machine Co. 72
Lombard & Co. Inc. 27

M

Management Engineering & Devel-
opment Co., The 23
Mead, Patton & Co., Ltd. .. ..
McArthur, Irwin, Ltd. 72
McAvity, T. & Co., Ltd. 32
McKinnon Steel Co., Ltd. 22
Mills Works & Machinery, Ltd. .. 80
Miramichi Quarry Co., Ltd., The .. 28
Montabone, J. A. F. 22
Montreal Locomotive Works, Ltd. .
Morrison, J. L. Co., The .. ..

N

National Paper Stock Co., The 24
Niagara Wire Weaving Co., Ltd. The..74
Northern Crane Works, Ltd. .. ..
Northern Electric Co., Ltd. 12
Northern Foundry & Machine Co. ..
Norwood Engineering Co. of Canada,
Limited 26

O

Oliver Contitnuous Filter Co. .. ..
Ontario Forestry Branch 9
Ontario Wind Engine & Pump Co.,
Limited .. ..

P

Pacific Coast Pipe Co., Ltd. .. .. ..
Peacock Brothers, Ltd. .. ..
Penmans Limited 20
Port Arthur Shipbuilding Co., Ltd. 29
Porritts & Spencer Co., Ltd. .. .. ..
Price Bros. & Co., Ltd. 76
Price & Pierce, Ltd. 82
Provincial Paper Mills, Ltd. .. .. ..
Pusey & Jones Co., The 16
Pulp & Paper Mill Accessories, Ltd. 85
Pulp & Paper TraTding Co., Ltd. ..

Q

Quarries, C. & M. Co. 72

R

Reed, Geo. W. & Co., Ltd. .. ..
Relph, Darwen & Pearce .. ..
Rolland Paper Co., Ltd. .. ..
Ross Engineering of Canada Ltd. .. 27
Russell Brothers 26

S

Sadler & Haworth .. ..
Sewall, Jas. W. 22
Sherbrooke Machinery Co. 8
Smallwood Stone Co., The 24
Smallwood Low Stone Co., Ltd. .. 27
Smith Howard Paper Mills, Ltd. .. 78
Spanish River Pulp & Paper Mills,
Limited 86
Steel Trough & Machine Co., Ltd. . 87
Stinson-Reeb Builders' Supply Co.,
Limited .. ..
Stebbins Engineering & Mfg. Co. .. 21
St. Maurice Paper Co., Ltd. .. ..
Sturtevant Co., of Canada, Ltd. 87
Swenson Evaporator Co. 87

T

Tallman, Brass & Metal, Ltd. 74
Taylor, J. A. .. ..
Taylor, H. S., Ltd. 23
Texas Gulf Sulphur Co. .. ..
Ticonderoga Machine Works .. ..
Tippett & Co., Ltdt. 5
Tyler, W. S. & Co., The 27
Trimbey Machine Works .. ..

U

Underfeed Stoker Co. of Canada, Ltd.
Union Screen Plate Co. of Canada,
Limited 87
Union Sulphur Co., The 30
United Wire Works, Ltd. 5

V

Vera Chemical Co. of Canada 87
Voorhees Rubber Mfg. Co. of Canada,
Limited 23

W

Wallace, John H. W. & Co., Ltd. .. 22
Wardlaw, T. D. & Son 27
Walmsley, Charles & Co. Ltd. 14-15
Warren, Kenneth L. 22
Warwick Woollen Mills, Ltd. 28
Watford Engineering Works, Ltd. . 6
Waterous Engine Works 90
Wayagamack Pulp and Paper Co.,
Limited 70-71
Weir, G. & J. (Canada), Ltd. .. ..
Westbye, P. P. .. ..
White, W. H. 22
Whyte, William 23
Wilson Patterson Co. .. ..
Wood Pulp Trading Co., Ltd. 68

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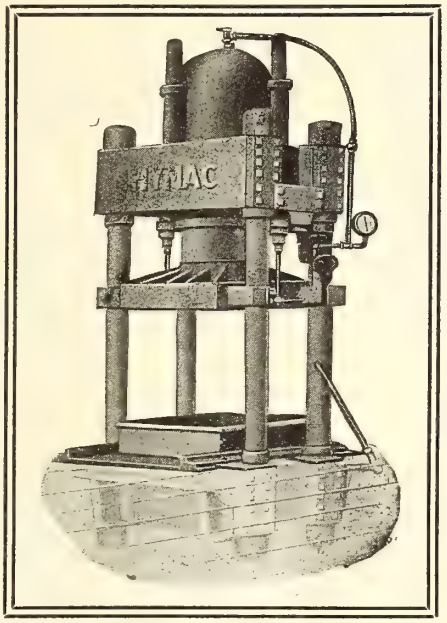
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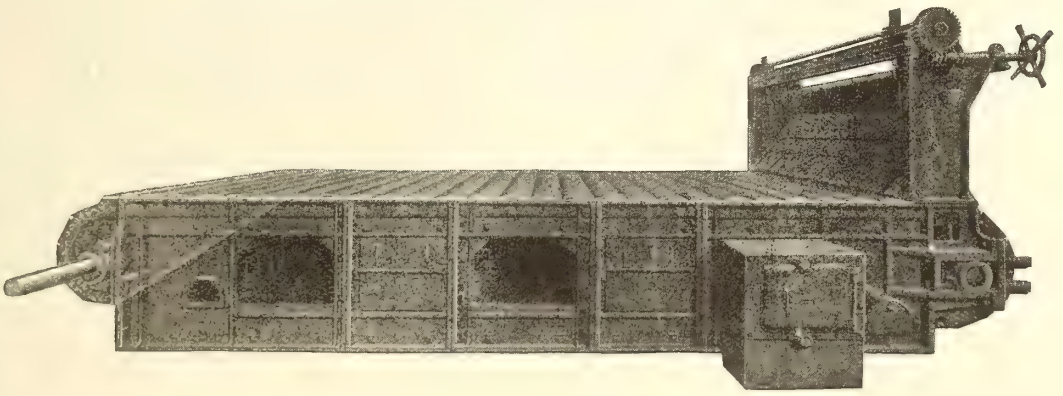
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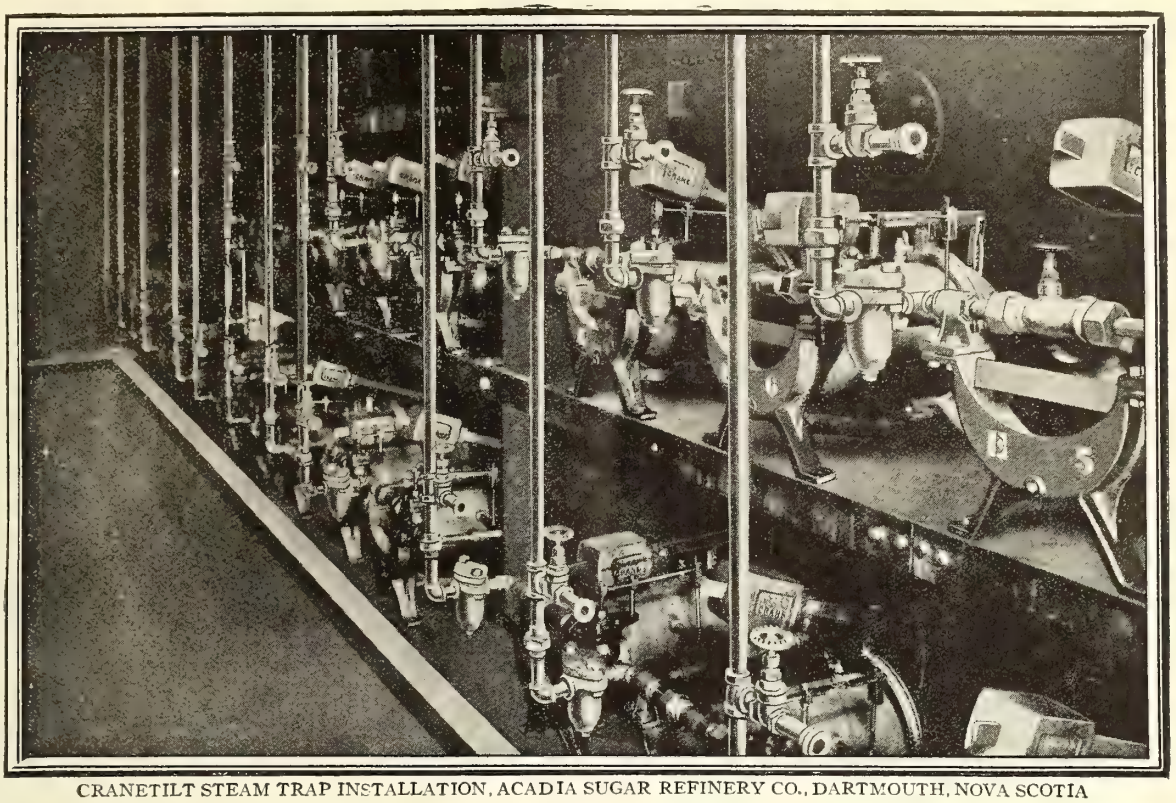
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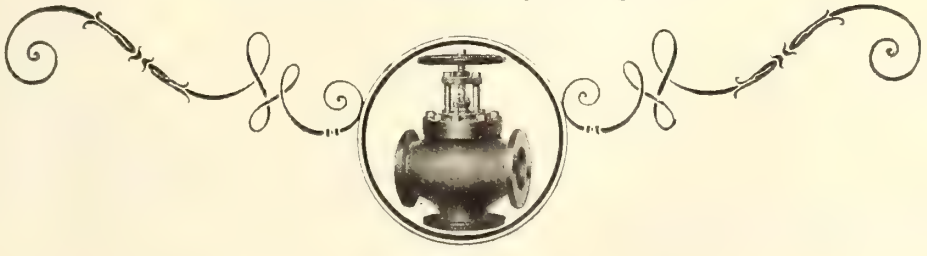
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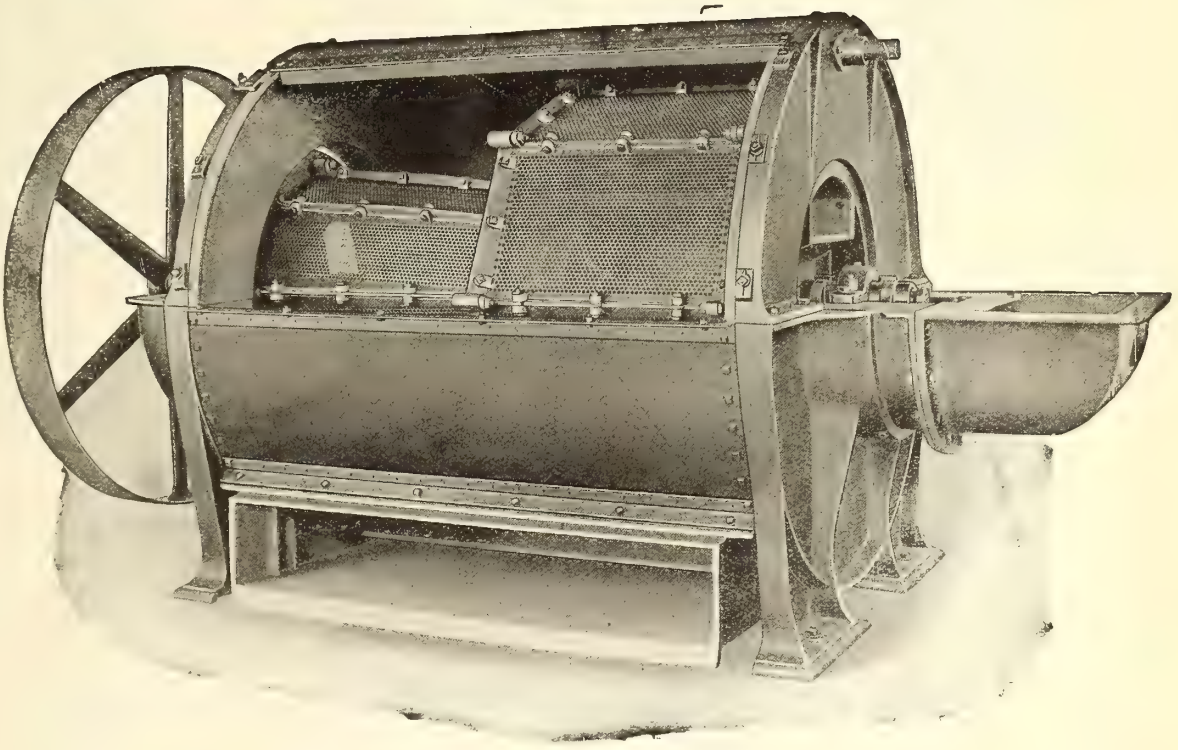
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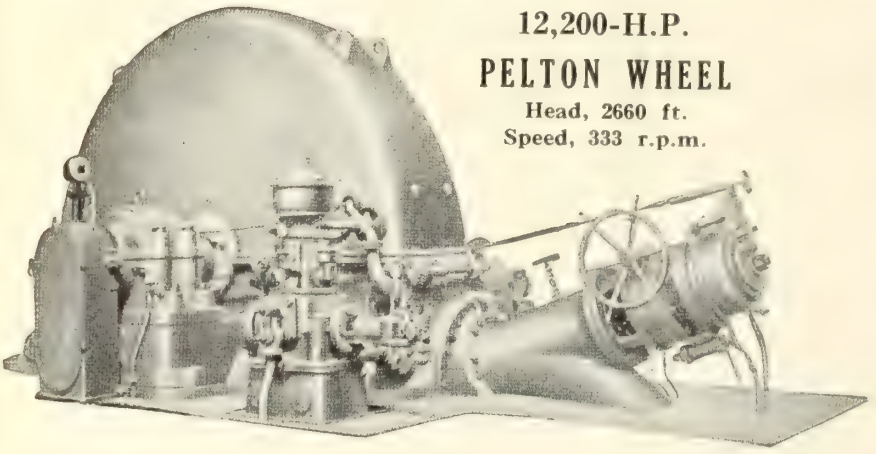
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WITHOUT
SHUTTING DOWN
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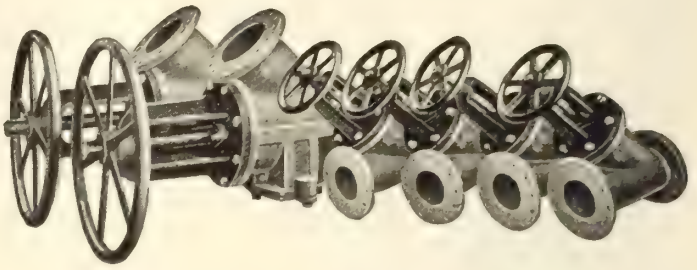
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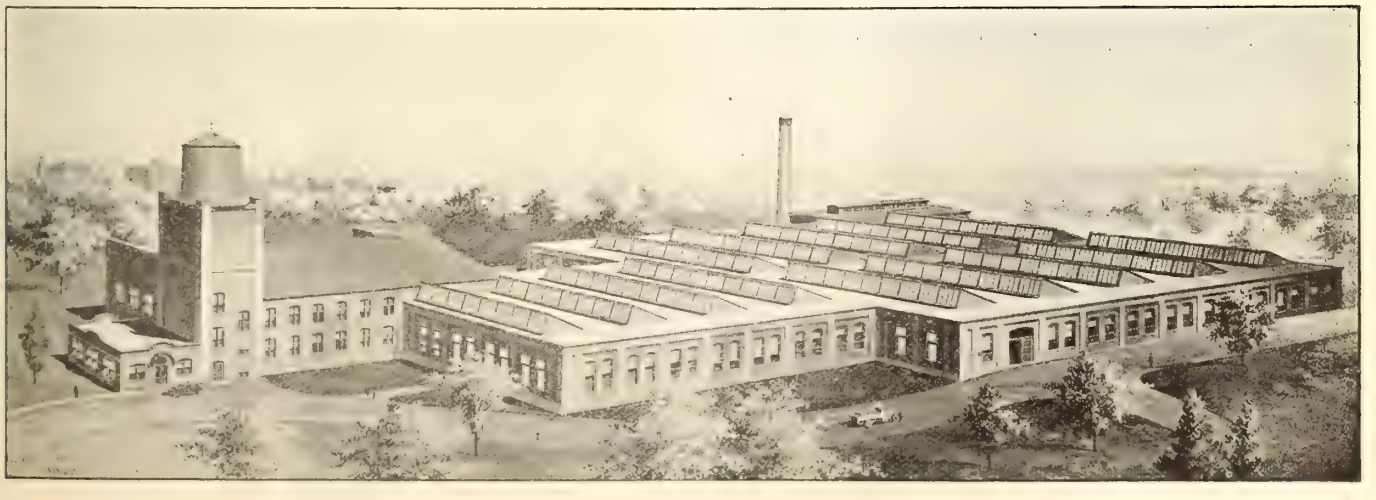
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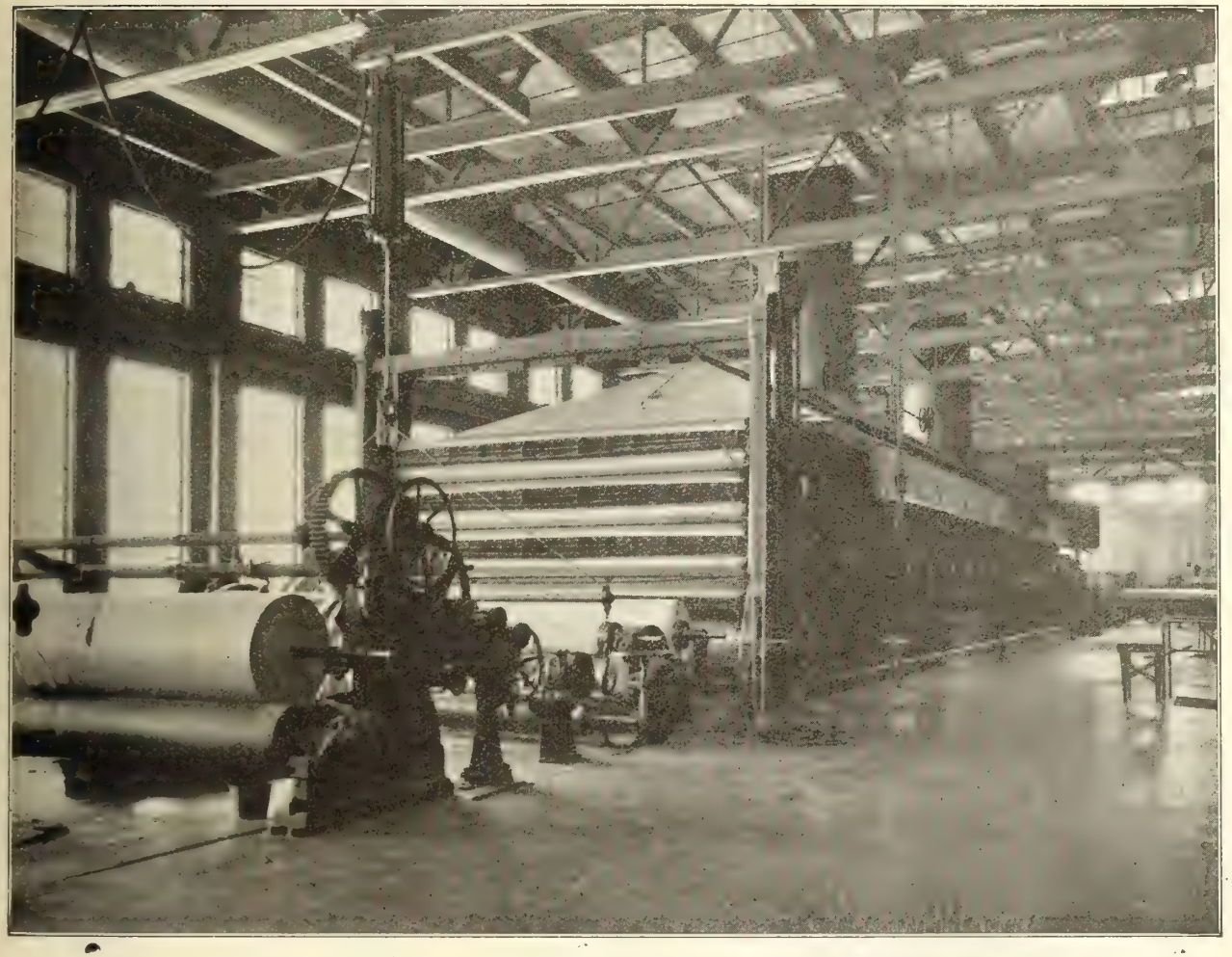
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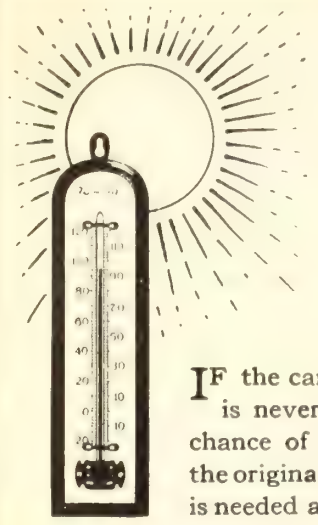
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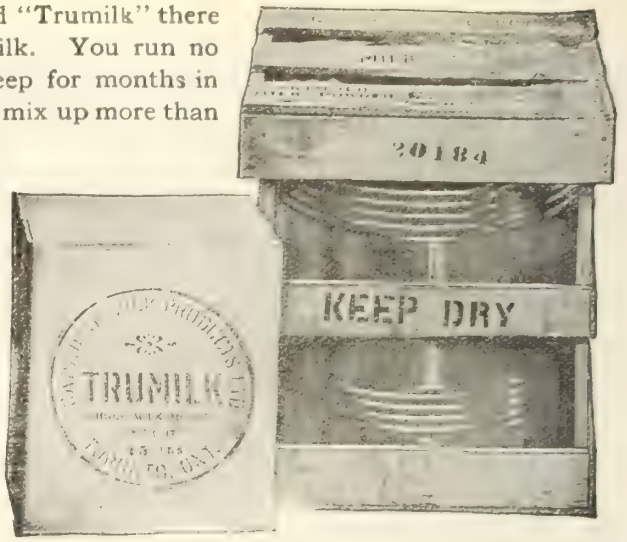
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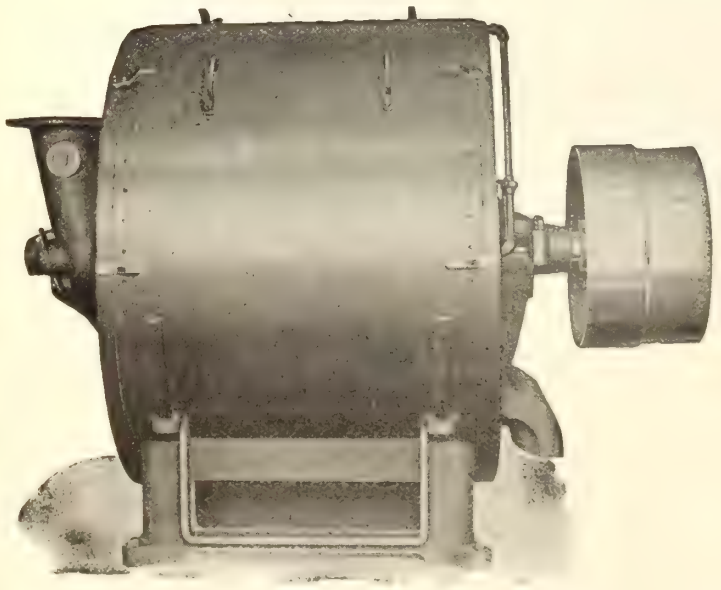
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For full particulars as to Ontario's great resources and the advantages offered for large wood-using industries, apply to—

Hon. Beniah Bowman,
MINISTER OF LAND AND FORESTS
TORONTO

Swenson Reclaiming Machinery

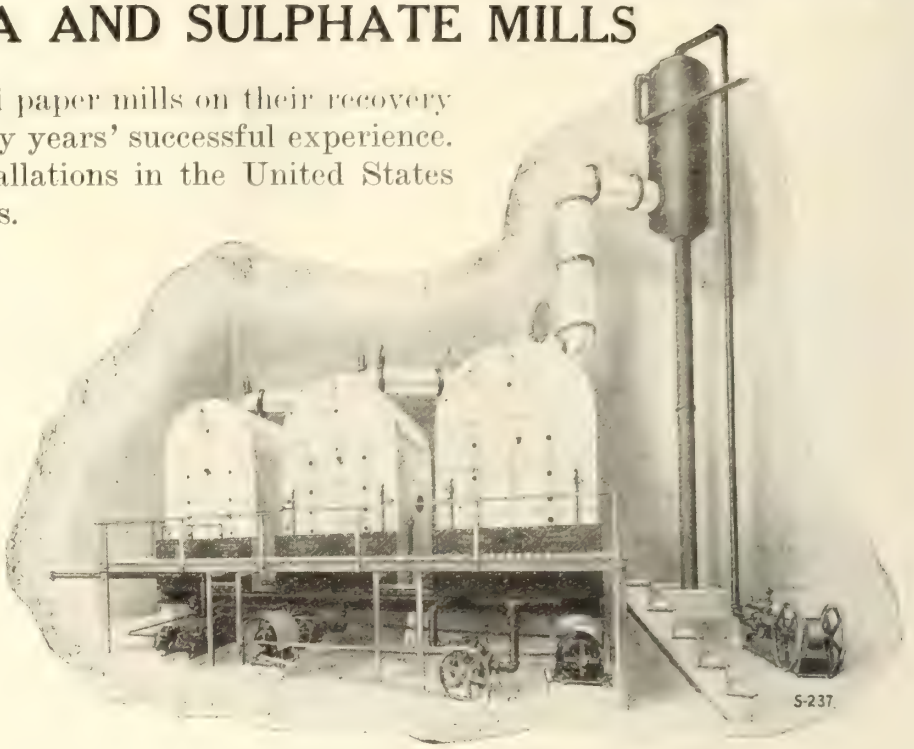
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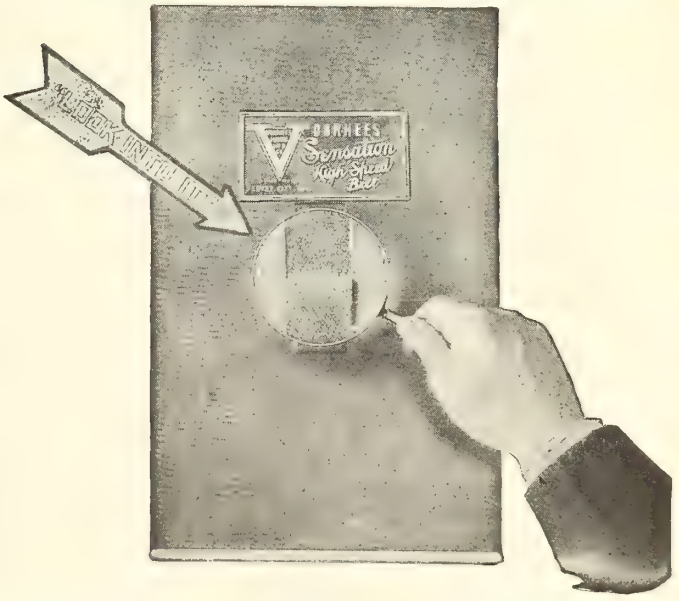
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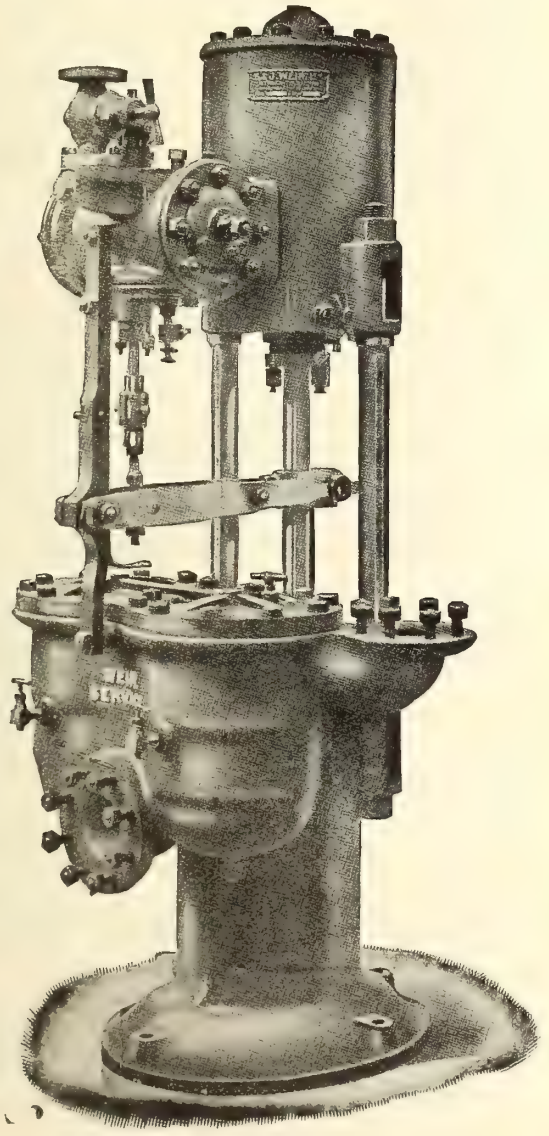
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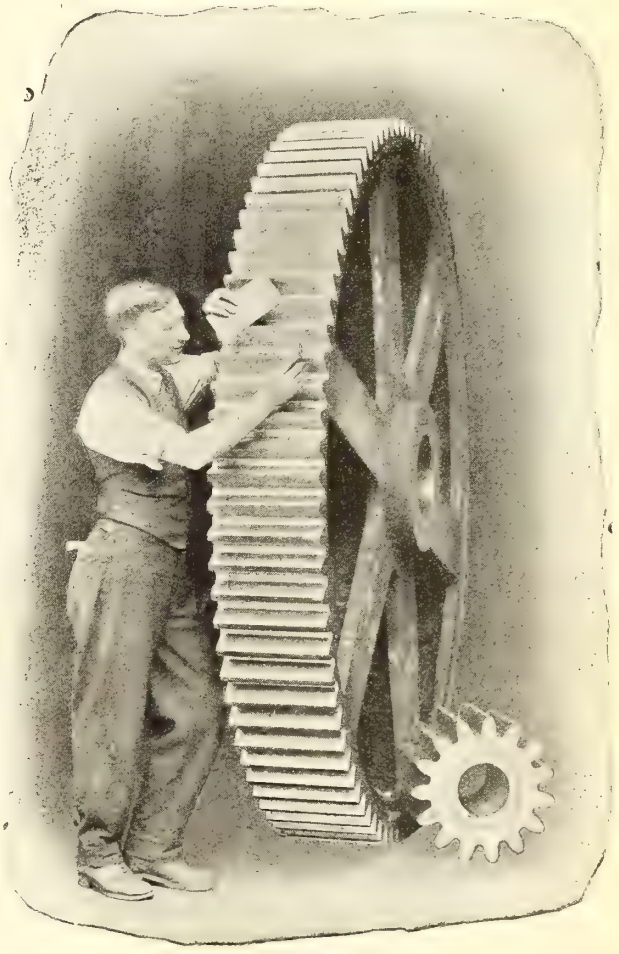
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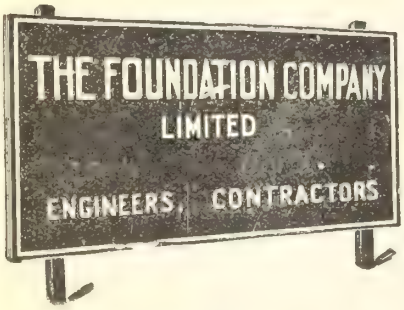
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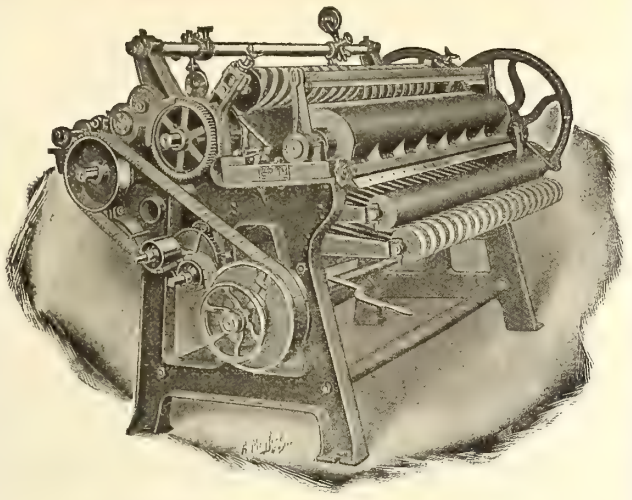
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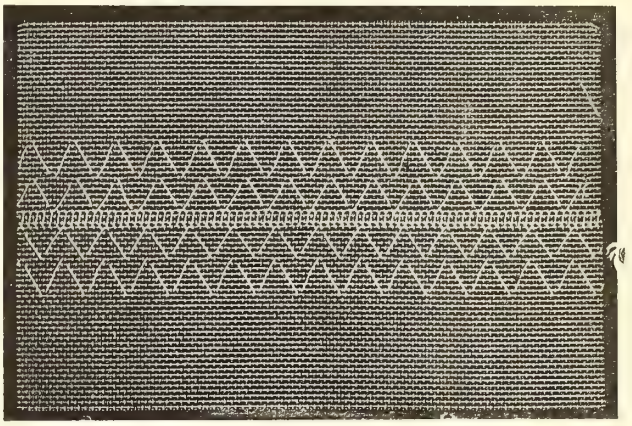
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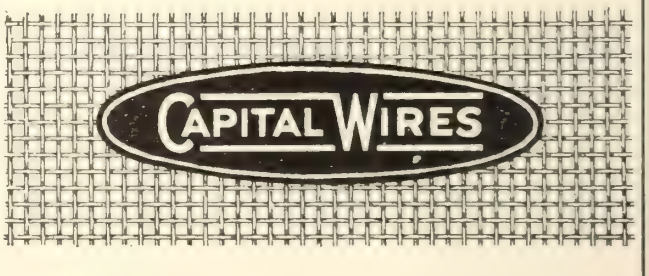
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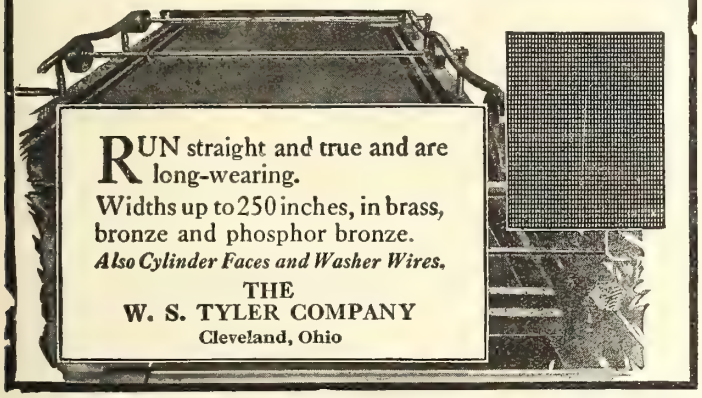
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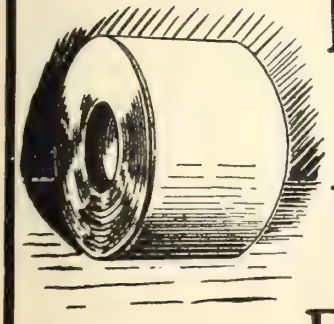
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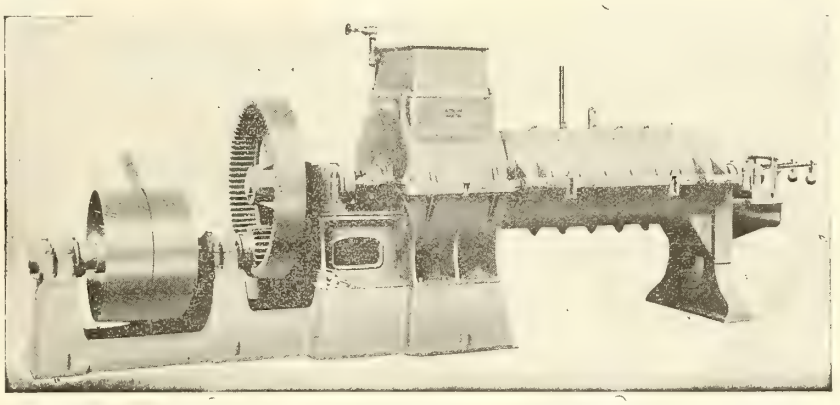
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VOL. XXI. GARDENVALE, QUE., JULY 19th., 1923 **No. 28**

TABLE OF CONTENTS

Editorial:

The embargo .. 717
Empire Forestry Conference .. 718
Give him a hand .. 717

Special articles:

The effect of the new Russian economic policy and the paper industry of North America 719
Power consumption of ball bearing dryer cylinder .. 729
Various views on the embargo .. 725

News of the Industry:

New Brunswick news .. 720
Mr. R. H. Campbell retires from Forestry Branch .. 727
Forestry car a school on wheels .. 724
Paper mill employees' annual picnic .. 724
Revive talk of mills in B.C. ..
New Brunswick still fears fires .. 728
At work for Canada .. 729
Lumbering in summer .. 729
Statistics to be compiled by A.P. & P.A. .. 732
Trade sags a bit in Japan .. 732
Norwegian strike is settled .. 732
Pulp and paper news .. 733
United States notes .. 735
Link-Belt name changed .. 740

Miscellaneous Information:

Your stockholders .. 724
It is hot in Hawaii .. 724
Six ways to save the forest .. 728
Forest fires .. 728
R. H. Campbell .. 729
Review of recent literature .. 730
New line of compressors .. 736
The birth of an industry .. 740

The Markets:

Canadian trade conditions .. 737
New York markets .. 738

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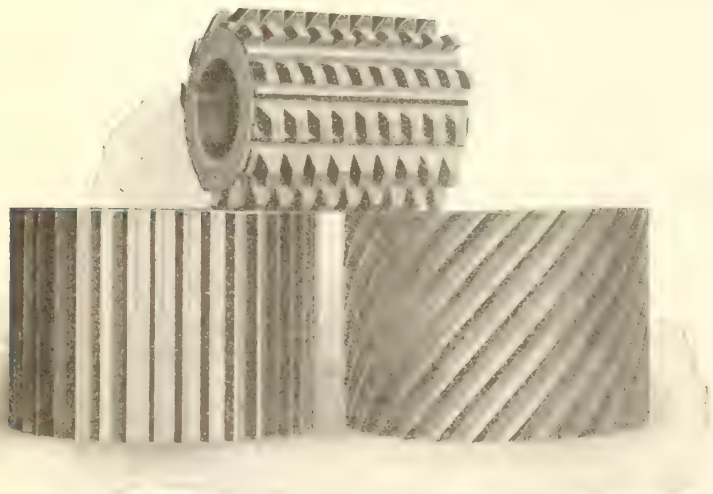
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The Effect of the New Russian Economic Policy on the Paper Industry of North America

By F. T. HARRIS

Assistant to Vice-President, International Paper Co.

(From "The Paper Mill")

As the new economic policy of the Soviet Government of Russia will apparently in the not distant future affect either directly or indirectly every paper manufacturer on the North American Continent, it seems timely to survey briefly the Russian paper industry and its economic background, and then to determine what will be the effect of the new policy on our own industry.

The new policy is the initial move toward the recognition of the rights of private property, and this first surrender to the laws of economic necessity has been virtually precipitated by the urgency of creating industrial activity to restore the balance of trade. Exports of merchandise from Russia during the best months amount to only one-half the imports, which are themselves an absurdly low percentage of those of the pre-war years.

With the gradual dissolution of communism, free internal commerce has been legalized, banks and commodity exchanges are reappearing, and thus far 8,000 factories and mines have been turned over to "capitalist" managers. The risks of trade would seem insurmountable to us, for there are no civil tribunals and no credit, and the arbitrary authority of the various Soviets may still be impressed almost at will. Nevertheless, the people, who for five years have appeared passive and somber, now seem to have awakened and to want to live and act. A class of profiteers has been developed in an amazingly short time and is attempting to seize control of the reviving industrial life.

In Lenin's address before the Fourth Plenary Session of the Third International, toward the end of last year, he said that he proposed to incorporate mixed companies, wherein part of the capital would be foreign private capital and the other part Soviet capital. Lenin then stated that in this manner they would learn how to trade, and that if it should prove desirable, such companies could be dissolved and the Soviet Government would after all really run no risk!

Thus the revolutionary government of Russia has assumed "capitalistic" features. Heavy indirect taxes and customs duties are levied, the overgrown bureaucracy is being reduced, and government industries are being abandoned. An example of this is seen in the customs duties which were immediately levied on the products of Finland when the provisional trade agreement with that country expired on October 3, 1922. This agreement was executed in the latter part of 1921, and was terminated by Russia on the six months' notice required to be given. The application of a tariff was followed instantly by a rapid rise in the prices of paper in Russia.

The Russian Revolution ends thus in an absolutism shorn of every revolutionary dream, just as that of the English of 1649 ended in the absolutism of Cromwell and the French Revolution of 1789 in that of Napoleon Bonaparte.

Although before the war Russian paper mills supplied only 18 per cent. of the total domestic consumption of all kinds of paper, yet it is obvious that Russia's enormous forest wealth and waterpowers will ultimately place the country among the great paper producing nations of the world. This will not be realized, however, for over a decade, as the rebuilding of Russian industries must proceed by districts, and a return to normal industrial life on a national basis cannot possibly be expected within that period. Then, too, the eventual construction of paper mills can only be accomplished with the support of the Government, as the greater part of the forests is owned by the State.

During the next ten years Russia must therefore be an importer of paper on a vast scale. The latest authentic information available shows that imports of paper are consistently increasing monthly. Finland, as before the war, is again the backbone of Russia's paper suply, and Germany, Czecho-slovia, and Esthonia are shipping in paper to a very limited extent.

When one considers that before the war, in 1913, Russia produced 424,000 tons of paper of all kinds; in 1920, 40,800 tons; and in 1921, 36,000 tons, one receives a vivid picture of how Bolshevism has ruined a paper industry, in common with other industries. And the picture becomes more vivid when it is known that the average production of paper decreased from 34,668 pounds per worker per year in 1913, to 3,611 pounds per worker per year in 1920. Both of these significant facts are visualized in the two accompanying graphs.

In 1913, 25,000 workmen produced 424,000 tons of paper, while in 1920, 20,000 workmen, or only 20 per cent. less, produced 40,800 tons, or 90 per cent. less paper. One of the causes of this lowered individual productivity is the inferior physical condition of the workmen. In addition to the physical hardships which they endure, the workers are deprived of a good part of their wages, about 40 per cent. being taken for the different labor organizations. A workman must pay membership dues whether or not he joins the organization.

We do not know how much news print paper Russia produced before the war. The Soviet schedules call for a production this year of 48,000 tons of paper of all kinds, of which 15,700 tons, or 33 per cent., is news print. This percentage cannot be applied to prewar totals, however, as the Soviet Government requires for its propaganda purposes quantities of news print out of all proportion to other grades. In this connection it is interesting to note that the daily newspapers of Petrograd, Moscow, and other large cities are owned by the Government. It is certainly doubtful whether in all Russia there is a single privately owned newspaper.

Economists used to tell us that the material advance of a people is measured more accurately by the consumption of iron and steel than by any other single

article. As the consumption of news print paper is now supplanting these metals as a more accurate barometer of conditions, Russia's demoralized state can be readily gauged by its almost negligible consumption of paper. The consumption of all kinds of paper now amounts to only about one pound per capita per annum, while in the United States we are using this year more than forty-five pounds per capita of news print paper alone.

The Soviet Government has organized a Technic-Economical Council to assist and promote industries. The first Congress of this body was held in Moscow, February 15-20, 1922. Shortly afterward, realizing the necessity of encouraging domestic paper making, the Government started a paper division known as the "Technic-Economical Council of the Paper Industry." The members of this council are prominent paper-makers and engineers. The council will be supported by assessments on the profits of the various paper companies. Under the auspices of the section there will be founded a school for paper-making, with laboratories for pulp and paper tests and experiments; a library will be established, literature on the subject of paper-manufacture will be published, and all other work of this nature now carried on in "capitalistic" countries will be begun by the Soviet Government. But the results of such work, as we all know, require a great many years to be either effective or of value.

Russia, in the next decade of renascence, will be an increasingly great importer of paper, all or the greater part of which will be logically drawn from the contiguous paper-making countries of Finland, Germany, Norway, and Sweden. The potential absorptive power of Russia in paper is best appreciated by a comparison. In the Southern States, where illiteracy is the greatest in the United States, there was a consumption of news print paper last year of eleven pounds per capita, and of all kinds of paper, of about thirty-five pounds per capita. The Eastern States, for example, used fifty-eight pounds of news print per capita, or five times as much, in the same period. In the best State of the Southern States there was one copy of a daily newspaper published to every seven inhabitants; in Mississippi, one copy to every thirty-eight inhabitants. In Massachusetts, there was one copy to every two inhabitants. If the consumption of paper by Russia were on the same low basis of that of our Southern States, it would be between two and two and a half million tons annually, as against the present consumption of under 100,000 tons. If Russian consumption of all kinds of paper were on the basis of that of our Middle Western States, where the population is the most thinly diffused, it would be about five million tons annually.

It will not be long before Russia's neighbors will have a ready market for their surplus paper at their very doors, and will find it more profitable to sell such paper to Russia than to the United States and South America, where they are now meeting and will continue to meet a competition which will keep down their profits. The influx of overseas news print paper into the United States during the past few years has been largely due to the withdrawal of the Russian market. An important factor in forcing overseas paper manufacturers, now sending their products to the United States, to develop a market in Russia, will be the disinclination of Americans to continue buying paper made thousands of miles away. There is no paper in the world consistently equal in quality to that made on the North American Continent, and the paper manufacturers over here are fully able to supply domestic requirements. Newspapers and other consumers of paper know that year in and year out they can always depend on satisfactory deliveries from home producers, and they are not going to continue to buy overseas paper, with all the attendant uncertainties, when it costs practically as much as domestic paper. The present influx of overseas paper is simply a flurry.

As it costs three times more to make paper in Russia than the price at which the best Finish paper is now being quoted, it is obvious that as Russia recovers, the adjacent countries will not be slow in discovering the existence of a market which will absorb all their paper and which will in turn enable them to quote highly profitable prices.

It is not beyond the range of possibility that before Russia can produce sufficient to meet its own requirements, paper from the North American Continent will be used in the land of the snows.

NEW BRUNSWICK NEWS

The erstwhile Ford assembling building at Glen Falls, N.B., which has been utilized as an assembling plant for the Ford Manufacturing Company, later as a motor car manufacturing plant, still later as an automobile painting and repair shop, and more recently, as a paper box and corrugated paper factory, will now house another paper box manufacturing concern. The D. F. Brown Paper Box Company of St. John, N.B. have removed from the building erected many years ago on Canterbury Street in St. John and are now at the Glen Falls plant. For two years, the Clarke Brothers Limited, owners of a pulp mill and two saw mills at Bear River, N.S., operated the Glen Falls plant as a paper box and corrugated paper factory. Owing, however, to financial difficulties within this concern, the paper box and corrugated paper factory was discontinued. The new occupants of the building, have been manufacturing paper boxes in St. John for the past half century.

The burning of slash during the spring and summer may be banned in the province of New Brunswick, starting with 1923. Efforts are being made to secure such prohibition. Pulpwood lands have suffered greatly from fires started by those burning slash during the spring and summer. Under the present law, a person may burn slash without permit until the fifteenth of May and after that a permit must be obtained. But hundreds of fires are started without permits. In fact most of the fires are started by persons who do not bother about permits in the least.

It is felt that slash burning should be deferred until the fall, when there is much less fire hazard. There would be little inconvenience in postponing these fires, and much of the valuable pulpwood would be saved. While prosecutions have been made in isolated instances, for starting slash burning fires without permits, practically all of the fire starters have escaped without being prosecuted. The penalty for starting a fire without permit is very severe entailing a prison sentence of fourteen years as the maximum, but owing to lack of officers, it is impossible to effectively enforce the law.

The great thing in this world is not so much where we stand, as in what direction we are moving.

A Determination of the Power Consumption of a Ball Bearing Dryer Cylinder

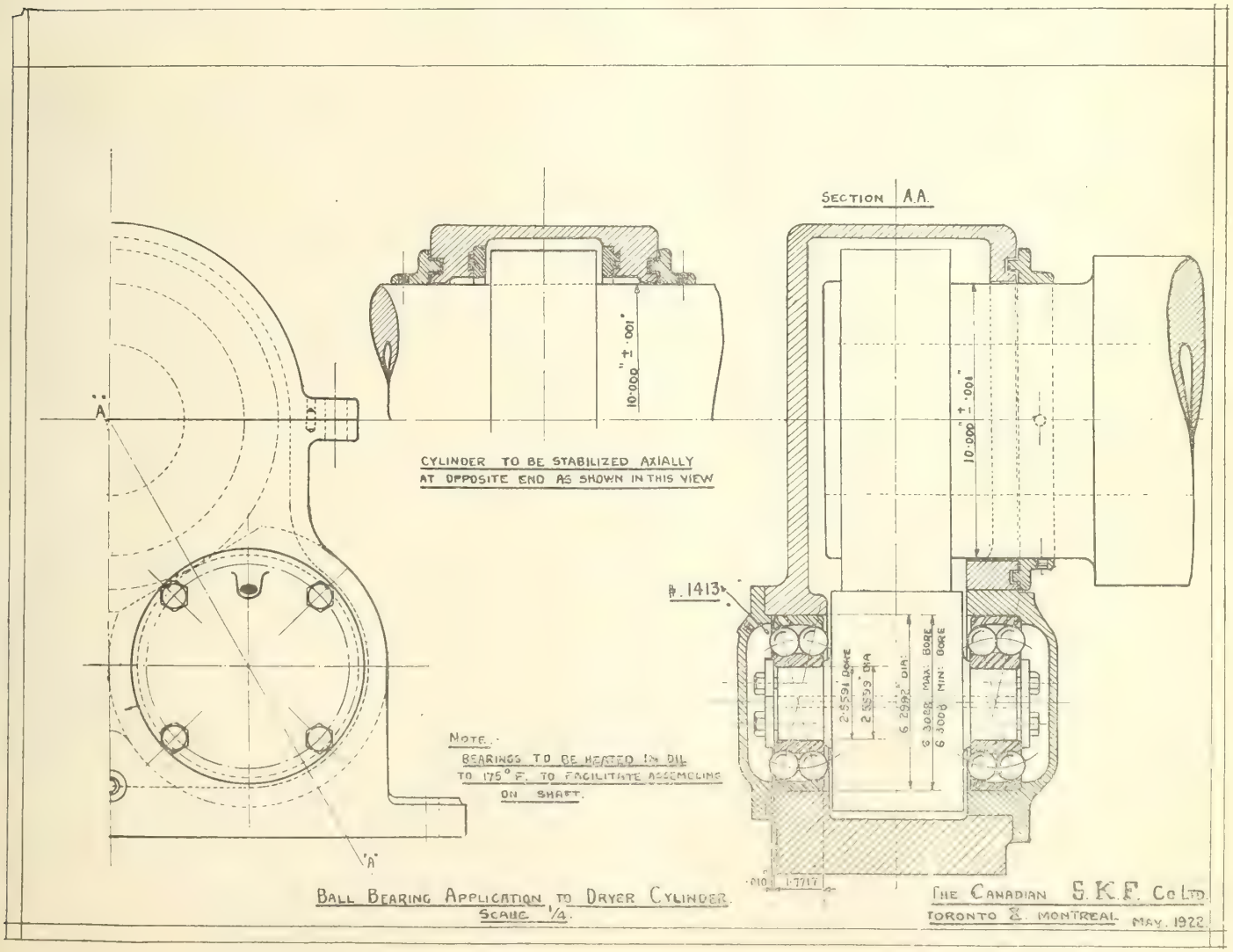
The ball bearing equipped dryer cylinders recently installed at the plant of the Chester Paper Company (Chester, Pa.) were the first of their size and type. They are part of an all ball bearing 166″ Tissue Paper Machine designed to run at 700 ft. per minute. This machine was manufactured and set up by the Pusey & Jones Company of Wilmington, Del. All of the ball bearing mountings were designed with the advice and approval of the S K F Industries, Inc. There are 17 dryer cylinders each 60″ diameter by 173″ face, weighing 12,000 lbs., and having a moment of inertia of 58,000 lb. ft^2.

This paper is a report of the test that was performed on the dryer cylinders in order to make a preliminary estimate of the power consumption.

The conditions of the test were unfavourable in that the cylinders were recently set up and had not previously been run. In fact the bearing castings were not finally lined up. On the other hand, the steam joints were not yet in place and there was no felt on the machine. The power loss due to the steam joints should be comparatively small in view of their design; that is several metallic rings, under pressure applied by several small springs. Some allowance should be also made for windage and weaving losses in the felt. Theoretically there should be no increase in the power consumption of the bearings when the felt is put on the machine. This is so because whatever load the felt tension adds to the weight on the upper cylinders will be subtracted from the weight on the lower cylinders. This arithmetic is somewhat faulty in actual practice, because there is a small change in the coefficient of friction at the higher and lower pressures.

The power consumption was determined in three independent ways, as follows:

1. By using a motor whose efficiency curve was known, and determining its power consumption.
2. By using a string wrapped around the cylinder and a weight to start the machine.



3. By getting the cylinders up to speed and then letting them coast. The time necessary to stop gives a direct indication of the bearing friction and the power consumption.

Method I.

3 HP 1200 motor (Fairbanks Morse & Co. No. 91957 2 phase 220 V 60 cycle) was set up on skids with a countershaft, and arranged so as to give five speeds at the cylinder varying from 10 to 45 rpm. (See Photograph.) The power consumption was measured and recorded by a Bristol strip type recording wattmeter (Model 725, Serial 398). During the first few readings, this wattmeter was calibrated against an indicating wattmeter loaned by the Philadelphia Power & Light Company. Power consumption readings were taken at each of the five speeds on cylinders No 1 and No 2 alone and then on the first three cylinders and two felt rolls running together. Fig. 1 is a graph of the net power consumption as determined by this test.

The recording wattmeter showed several peculiar vibrations in the rate of flow of power. In order to locate these, readings were taken with the motor alone, and also with the motor and countershaft alone. These readings indicate that the motor itself causes no vibration at all, and that there is a small vibration of about 85 per minute produced by the short belt to the counter shaft. Superimposed upon this is a vibration caused by the unbalance of the cylinders. It is difficult to balance a 12,000 lb. cylinder very closely, and as the total force to turn the cylinder is about 10 lbs., at the surface, it is to be expected that the variation of power will be large compared with the total. Thus at the slow speeds there is a large wave whose period corresponds exactly with the speed of the cylinder and a small wave produced by the countershaft.

It is difficult to explain the variations of power with speed indicated in Fig. 1. The various possible causes are; first, that the cylinder bearings warmed up slowly and second that the unbalance of the cylinders caused a speeding up and a slowing down and the resulting belt slippage involved a power loss. This latter effect is naturally minimized at the higher speeds on account of the fly wheel effect. This is the only plausible explanation for the peculiar shape of the power curve for all three cylinders. In any case the only positive conclusion possible is that the three cylinders did not use more than ½ HP or approximately 125 watts per cylinder at rated speed.

Method 2.

A string was wrapped several times around the cylinder and passed over a small pulley on the ceiling and 15.1 lbs. tied at the end. The photograph shows the string before it was attached to the cylinder.

This part of the test was complicated by the fact that the unbalance of the cylinder produced a larger torque than that necessary to overcome the bearing friction. In order to subtract this unbalance effect it was necessary to use a large starting torque and measure the acceleration over a complete revolution. Then using the average acceleration and the moment of inertia of the cylinder, it was possible to determine what part of the applied torque was used to produce acceleration, and what part was absorbed in bearing friction.

Figure 1

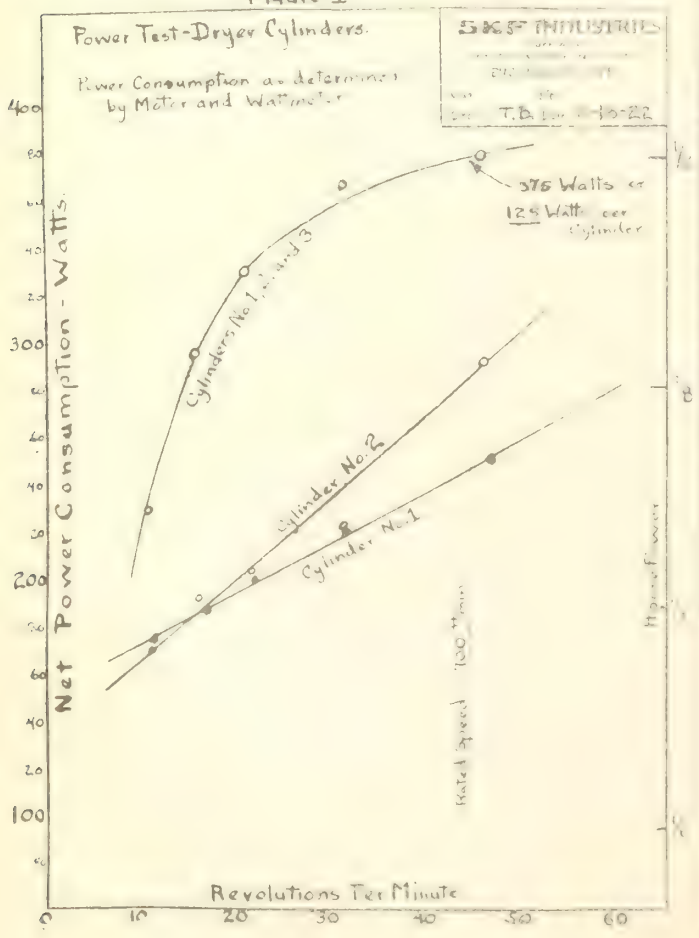


Figure 2

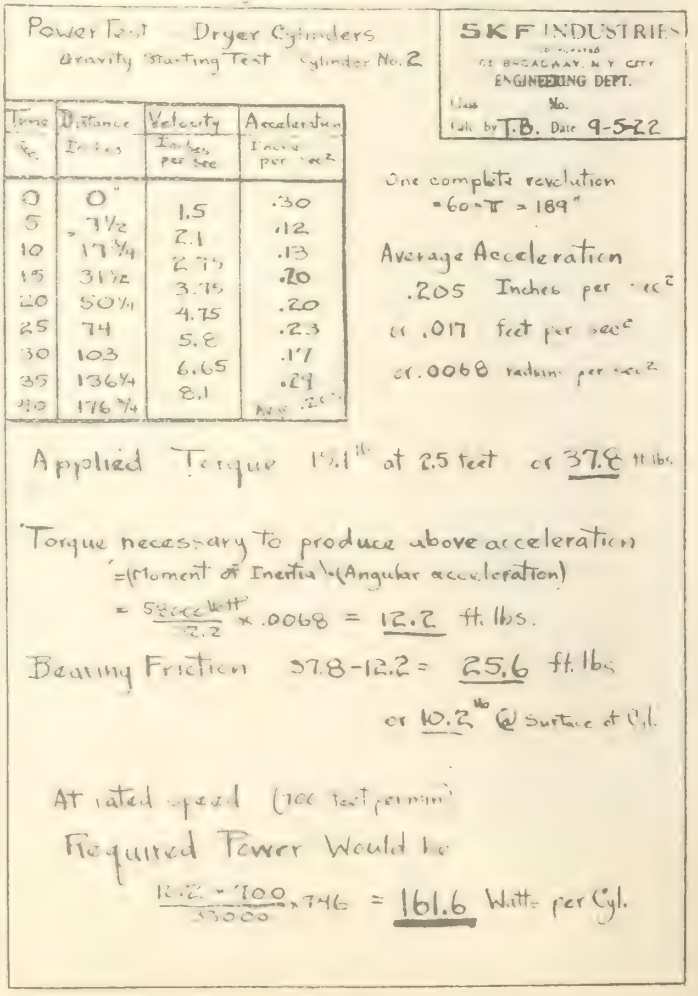


Fig. 2 gives a list of the readings and calculation of the bearing friction. The conclusion is that the power necessary to overcome the friction alone would be 168 watts per cylinder at rated speed. Of course, this figure assumes that the coefficient of friction at starting will be the same as that at rated speed.

Method 3

When all three cylinders were at rated speed they were suddenly freed by the breaking of the long belt. Then the time required for each to come to rest was measured. (See Fig. 3). This period of coasting varied from 4, m. 55 sec. for cylinder No. 1 to 10 m. 5 sec. for cylinder No. 2. The large variation indicates how unsettled the bearing conditions were.

Using the moment of inertia of the cylinder and the initial speed, the initial kinetic energy was arrived at. Then assuming again that the coefficient of friction is constant, we can determine its average value over the range from starting to rated speed. The resulting power figure is 123.6 watts per cylinder at rated speed.

Conclusions

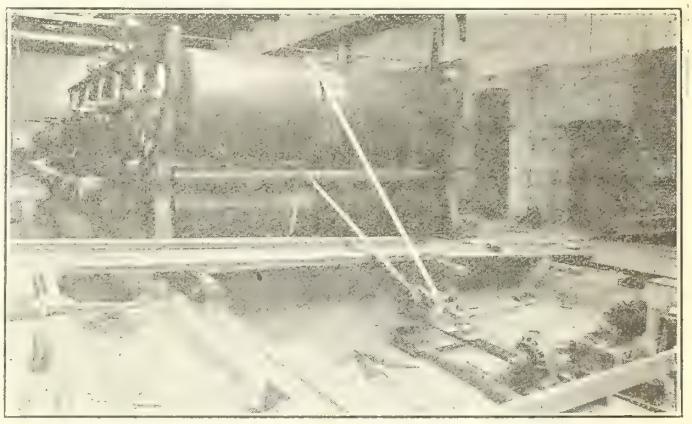
The power consumption per cylinder has been determined as follows:

Method 1.	By motor and wattmeter	125	watts
Method 2.	By gravity starting test	161.6	watts
Method 3.	By coasting test	125.6	watts
	Average	136.4	watts

For 17 dryer cylinders, the total would be 3.1 H.P.

To this should be added an allowance for the friction of the steam joints and the windage and weaving losses in the felt. In determining the necessary power for the whole machine, account should also be taken of the auxiliary power losses, such as the felt dryer, if there is any, the felt carrying rolls, and the gear losses. Therefore a conservative estimate of the total power would be 5 H.P. though the machine would probably use about 4 H.P.

The only means of comparing these results with other tests is to determine the absolute value of the coefficient of friction. As it is impossible to separate the friction at the surface of the roller from that in the bearing, it was assumed that the coefficient of friction was the same at both places, though that at the bearing should be less. Using, this assumption and 136.4 Watts per cylinder, the coefficient of friction was



Photograph of Set-up for Test.

Figure 3

Power Test - Dryer Cylinder.
Coasting Test

SKF INDUSTRIES INCORPORATED
165 BROADWAY N Y CITY
ENGINEERING DEPT.
Class No.
Calc. by T.B. Date 9-5-22

Roll	Initial R.P.M.	Time to Stop.
Dryer Cyl. No. 1	46	4 min. 55 sec.
" " " 2	46	10 min. 5 sec.
" " " 3	46	6 min. 55 sec.
Felt Roll No. 1	260	4 min. 45 sec.
" " No. 2	260	2 min. 45 sec.

Dryer Cylinders. Average 7 min. 18 sec.
Felt Rolls. Average 3 min. 45 sec.

Initial Kinetic Energy per Cylinder is

$\frac{1}{2}$ (Moment of Inertia)(Angular Velocity)^2 = $\frac{1}{2} I \omega^2$

$= \frac{1}{2}\left(\frac{58000}{32.2}\ \text{lb ft}^2\right)\left(\frac{46 \times 2\pi}{60}\ \frac{\text{radians}}{\text{sec.}}\right)^2$

$= 20.850$ foot pounds.

Distance travelled at surface is

$\frac{46}{2}$ (r.p.m.) $\times$ 7.30 (minutes) $\cdot \frac{60'' \times \pi}{12}$ (Circumference)

$= 2640$ feet

Bearing Friction $\frac{20850}{2640} = 7.91$ lbs at surface of Cyl.

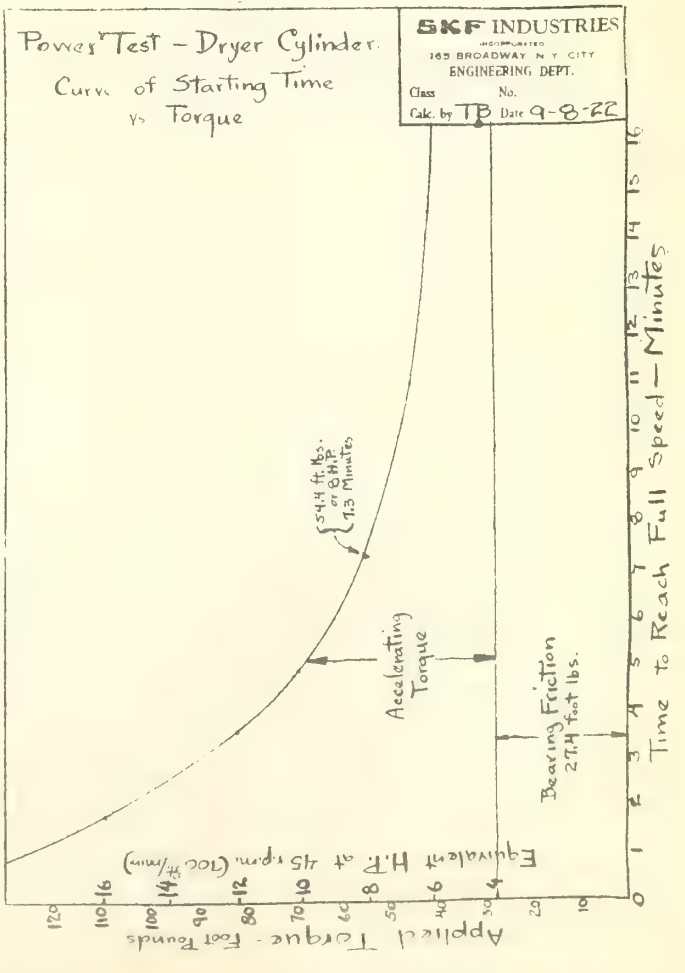
For Felt Rolls .97 lb at Surface (10" Dia.)

At rated speed (700 feet per min)
Required Power would be

$\frac{700 \times 7.91}{33000} \times 746 = 125.6$ Watts per Cyl.

For Felt Rolls 15.3 Watts each (No Felts)

Figure 4



.0018 or 1/550. This value corresponds with that usually arrived at for ball bearings, that is 1/600.

The results of this test are of particular importance in their application to the problem of driving dryer sections. There is a movement on foot to eliminate the gear drive entirely and make use of the reduced friction to drive through the felts only. In this particular case such a drive would produce a maximum tension in the felt or approximately 200 lbs. or a little over one lb. per inch. of width.

There is a considerable discussion as to the starting minutes (coasting time). Therefore to start the machine. This power is a function of the desired starting time. In this particular case, there is enough data on hand to determine the curve, (Fig. 4) as follows: The entire machine requires about four HP when running, that is the bearing friction torque is 27.4 foot lbs. But this resisting torque will stop the machine in 7.3 minutes (coasting time). Therefore to start the machine in 7.3 minutes requires 27.4 ft. lbs. to overcome bearing friction and 27.4 ft. lbs. to accelerate. This latter component varies inversely as the time of starting, whereas the bearing friction remains approximately constant. Thus we can construct figure 4.

The curve indicates that a large investment in oversize motors and gears will hardly save enough time to be worth while. Moreover, if the motor is considered capable of 100% overload torque when starting, the nominal rating will be one half of that shown on the curve.

In applying the data of this test to other machines, the power can be considered proportional to the speed and to the total weight though only for very approximate results.

YOUR STOCKHOLDERS

STOCKHOLDERS are frequently "a long way from home." News of the nest wherein their money is invested is received with a particularly warm welcome.

A growing practice in many large corporations shows realization that shareholders receive with gratitude "human interest" information about processes, expansions, new products and general developments of "their" company.

Frequently, in many concerns, the list of shareholders will also be a list of prospects, as well as representing hundreds of vitally interested indirect agents ready to recommend and suggest the purchase of the products manufactured.

Where the investment is, the heart is not very far distant. There is here presented a chance to tell more of the news of the business, its progress, its line of products and to develop many sales.

If shareholders are made familiar enough with their own products and company, they will also become buyers. The quarterly mailing of dividends presents an easy opportunity to do a bit of sales work and good-will developments.

Folders, pamphlets and booklets present economical ways of carrying on this propaganda for greater interest in matters of value to the company.—The Crest.

Words better left unsaid come back to grieve us when we think them dead.

FORESTRY CAR A SCHOOL ON WHEELS

One of the strangest "schools" in Canada is the forest protection car of the Canadian Forestry Association, a non-government and non-commercial institution, which is at Bonaventure station this week, after winding up a tour of New Brunswick, Nova Scotia, and the Lake St. John region of Quebec. Travelling more than 12,000 miles between April and November, and attracting more than 250,000 visitors, the forest protection car has established itself as a welcome annual itinerant in regions which are seldom touched by outside educational agencies.

The interior of the car is divided into latticed rooms. Working models present a graphic picture of a thriving Canadian community before and after a forest fire has swept away its means of sustenance. Electrical illusions compell the onlooker to realize the ugly facts behind the phrase "bush fires." An erosion model presents a contrasted picture of a valley farm protected in its water supply by mountain forests and a second farm ruined and washed out by the torrent of deforested hillsides. By illuminated transparencies, process exhibits, etc., other aspects of forest protection are presented.

To attract crowds for the evening meetings in remote railway communities, a Marconi radio set of eighteen bulbs is carried, with which interludes of concerts a thousand miles distant are presented along with educational motion pictures. The Canadian Forestry Association's lecturers this season have presented motion pictures in many communities where "movies" of any kind had never previously been seen by most of the population. To witness the excited expression of the older people and the unrestrained shouting of the children under such novel circumstances was an experience difficult to describe. In one village of Northern Quebec, the lecture was held in a large school-house, built on log posts, and in the middle of the address, the entire floor, under the weight of the crowd, dropped uniformly three feet to the level of the ground without injuring anyone. The chairman, seated on a nail keg, was bowled over but, otherwise, the dignity of the gathering suffered little.

IT IS HOT IN HAWAII

In spite of the fact that it gets hot in Hawaii, a reader of the Pulp and Paper Magazine in the paper mill which utilizes sugar cane waste, finds time for studying the textbooks on "Pulp and Paper Manufacture", and has been good enough to write us quite a letter on general conditions in that far away land, and makes the following remark with regard to the textbooks:

"I now have volume III and am looking forward to volume IV and V. They are certainly fine books on the subject; everything is treated so completely and thoroughly, and the cost of the set is so reasonable that they are within the reach of everyone connected with the industry. The Pulp and Paper Industry was sorely in need of a work of this kind."

PAPER MILLS' EMPLOYEES ON ANNUAL PICNIC

Employees of the Port Arthur Division, Provincial Paper Mills, Limited, held their annual picnic at the company's farm on the Oliver Road, Monday last. There was a happy gathering of employees and their families and during the day a program of sports and athletics was carried out.

Woodlands Section

MR. R. H. CAMPBELL RETIRES AS DIRECTOR OF FORESTRY AFTER YEARS OF EFFICIENT SERVICE

(For the following account of Mr. Campbell's career we are indebted to the Canadian Forestry Magazine)

Every Canadian who is interested in forest conservation will learn with deep regret of the retirement of Mr. R. H. Campbell, Director of Forestry during the past sixteen years, in the Department of the Interior. His resignation from active service was fittingly marked on the evening of April 30th last at the Halcyon Club, Ottawa, by the members of the Forestry Branch staff, among whom were represented besides the Head Office staff those of the field offices in Manitoba, Saskatchewan, Alberta and British Columbia; the Forest Products Laboratories in Montreal and Vancouver, and the Forest Nursery Stations at Indian Head and Saskatoon.

The occasion was greatly enhanced by the hospitality of the ladies of the Head Office staff who served tea at 5 P. M. After tea Mr. Campbell was presented with a large silver presentation bowl from the entire staff of the Branch as a souvenir of their long association with him as Director of Forestry. The bowl bears the inscription, "Robert Henry Campbell, Esq., Director of Forestry, 1907-1923. From tht Dominion Forest Service. A token of highest esteem and personal affection." Besides this handsome gift from the whole Canadian Forest Service, the Ottawa staff took occasion to present Mr. Campbell with a club bag.

In making these presentations on behalf of the staff, Mr. E. H. Finlayson, Acting Director of Forestry, paid high tribute to the work of the retiring chief while in charge of the Branch. He pointed out that Mr. Campbell had won the high regard of his staff, not only by the thoroughness of his work, but also by his perseverance in establishing the importance of Forestry in Canadian life. Mr. Campbell had idealized the work of forestry, and had lost no opportunity to impress his ideal upon those associated with him in the work of administration. The earnestness with which he strove to live up to his ideal was carried out into the Canadian public life, and his influence on the progress of Canadian Forestry will long be felt.

Not less interesting were Mr. Finlayson's reminiscences of field experiences with Mr. Campbell on the occasions of his yearly visits to the Canadian forests, when he entered completely into the out-door life of the foresters and rangers, and by his manliness and ever present respect for their ideas, completely won the loyalty of all. The practical out-door woodsman can be approached only on his own ground, and Mr. Campbell was big enough to recognize this. Mr. Finlayson's reminiscences were carried on by Mr. D. R. Cameron, recently transferred to Head Office from the field, and who was chosen to represent the field staff at the presentation. Mr. Cameron dwelt upon the helpfulness of contact with Mr. Campbell in the out-door life during these periodical inspection trips, and attributed the splendid esprit de corps of the field staff to the fellowship of his visits. Mr. Cameron also read a number of telegrams received from the outside offices expressive of their regret for Mr. Campbell's retirement, and of their high personal regard for him.

It was not easy for one of Mr. Campbell's seriousness to lay down a work not yet finished, but he rose to the occasion and after acknowledging the gifts and expressions of personal regard in a most feeling manner, he recalled many interesting experiences in the work of the Branch. He regretted laying down work which had always been so pleasurable to him, not only in connection with the Canadian Forest Service, but also with that of the Canadian Forestry Association with which he had been identified before taking up the task of organizing the Government work.

For his successor he bespoke the loyalty of the personnel of the whole forestry staff, for whose individual opinions he had always had a sympathetic regard and exhorted all to remember the importance to the nation and to the world of the work in which they were engaged.



the success of the gathering, involving, as it did, the government forestry administrations, the lumbering and pulpwood industries, the railways and other industrial interests and the men of science, was due to his hard work and skilful guidance.

His task as Director of Forestry has not been light and the splendid results achieved show the efficiency and worth of his work. From a head-office staff of scarce half a dozen, the number has increased to fully half a hundred, and the field organization shows similar increase and strength. The organization of the forest reserves, scarcely existent at his appointment,has been brought to a high state of development, and the work of protecting the forests — both within the forest reserves and without — from fire has reached a corresponding state of efficiency. Mr. Campbell lays down his task with a realization of high ideals already well on their way to attainment, and is followed by the heartiest good wishes of his late associates.

SIX WAYS TO SAVE THE FOREST

1. **Matches.**—Be sure your match is out. Break it in two before you throw it away.

2. **Tobacco.**—Throw pipe ashes and cigar or cigarette stumps in the dust of the road and stamp or pinch out the fire before leaving them. Don't throw them into brush, leaves, or needles.

3. **Making Camp.**—Build a small camp fire. Build it in the open, not against a tree or log, or near brush. Scrape away the trash from all around it.

4. **Leaving Camp.**—Never leave a camp fire, even for a short time, without quenching it with water or earth.

5. **Bonfires.**—Never build bonfires in windy weather or where there is the slightest danger of their escaping from control. Don't make them larger than you need.

6. **Fighting Fires.**—If you find a fire, try to put it out. If you can't, get word of it to the nearest fire ranger at once. Keep in touch with the rangers.

FOREST FIRES

By MAURICE B. CARON, From *The Star*, Montreal

All too frequently, the school teachers of geography at the plastic time of youth have said to us "Canada, the land of boundless forests." How well, might have been added "Boundless forests, but for the hand of the bounder." The lesson at school and the oratory in the assembly hall tickled our hearts at the time and sent thrills of pride down our spines. Poor fools we were in those days. We believed the rubbish. The teachers, good souls, taught their lesson in much the same spirit as our class presidents carried Union Jacks to the assembly hall on days of national squeal.

A pall of heavy smoke hung over this city last week. People in the street gazed at it. Some ventured the idea that it was the end of the world. Knowing heads said "Forest fires." The end of the world business may have sounded rather humorous to some, but to the man of experience there was truth in it. Canada without her forests appeared before him as a sickly dame. Crowds were asking her for papers, magazines, time tables, income tax forms, anything in the way of paper. She was hanging her head poor woman in a very embarrassing situation, naked, cold, no furs to cover her, bad water to drink, no wood for shelter, none for fire when she really needed it, horribly unfortunate. Yet those crowds were calling for paper. The paper market looked like a pile of marks with a Ruhr situation setting a match to it. While we can say that the end of the world omen is bunkum, we must admit that Canada is beginning to squirm under the stranglehold in which she is gripped. This sort of thing goes on from year to year so much so that we have grown to expect it, very much like a Christmas present without the tree. We clap our country on the back at budget time, once a year saying (softly at first) "Never mind old lady, do better next time." Oddly enough, she does better, like a horse under the whip. Her natural resources, the horse, we, the burden. Yet she's a good horse. Let some of us get off, lessen the burden, clean her stall, sow a few decent oats, then come back, jump on again. Then she will carry us.

Fire prevention rings in our ears day by day, but are we growing better and better? Answer, but be honest. The newspapers tell us all about the great fires in northern Quebec and Ontario, western Canada, Northern Canada, everywhere in Canada. They tell us where they are, what their losses, when they started. How they will end, God alone knows. We see this in print, but optimism, dangerous trait of the race informs us that all will be well, and besides, "why should you as an individual worry about the things you can't see. Take a holiday, old worried brow, and get a pack on your back."

The suggestion sounds well and out we go into the woods.

"Remember that clump of spruce opposite your place?"

"Yes, why?"

"All charcoal now."

This sort of thing greets us at the station anywhere in the mountains. We leave the station, and after a ride along a road once beautiful, we reach our camping spot. The fire has spared our little patch. Our neighbour who owned the clump of spruce owns now something worth about half a dollar.

"Poor devil," we say, sympathetically of course. "But let's think of pleasanter things. A little trout for supper, what say?" The canoe goes out from shore with all the boys aboard "Stroke" says the man in the bow, "Stroke" adds the man in the stern.

"What about the little camp fire?" suggests the oldest man in the party.

"Now, old timer," comes the reply from the tenderfoot "It'll take care of itself."

The fishing is not particularly good. The stream that used to run through the patch of spruce has dried up. There are no trout at the mouth this year. After an exhaustive casting we secure a few fish for supper.

Our little fire, a quarter of a mile away looks very cheerful. The evening breeze is springing up, the sparks fly. As we approach, the breeze cat-paws the water. Little wavelets form. Big waves grow. The little breeze becomes a wind—one of those nice head winds. The little fire grows to be a monster. The trees take a liking to it and away they go in one huge flame. The chorus in the canoe, in the happy way that choruses have, shouts "Another good camp gone wrong." Our little episode ends with one of those quiet country scenes —a road, a dazed fishing party trudging homeward with empty flasks. The moral of the little story is "Leave a man in camp when the fire is going. That fellow can save a forest.

The country is doing what it can to protect the forests, the lumber companies of necessity are doing the same. What part do you play in the scheme of things? The rangers are keeping the trails open for the hunter and the fisherman.

The water is kept in the lakes by protecting the forests. Partridge live better in shade-tree patches than in brules.

So when you cut down a tree, plant two. Forests take forty years to grow while a man grows old in forty years.. The fire losses of this year are equal, so far, to the amount of lumber legally consumed last year. Forests fires are a direct blow at the present and potential life of the Dominion.

The Minister of Lands and Forests, the Hon. Honoré Mercier has announced that a permit is necessary for the public to enter the forests.

Will the public follow the Minister or will it follow the preachers of the policy of catch, as catch can—the policy that throws thousands out of employment and lowers by many notches the property value of the Dominion.

If you don't know anything about the forests go to see them while they last. If you know, see them again, plant some trees and watch them grow. Come back in forty years and say with the forests "Take a look at me now. You made me what I am for thirty cents."

LUMBERING IN SUMMER

St. John, N. B., June 9. — Lumbering operations are to carried on during the summer months in several parts of the province, although in the past it has been the custom to cut logs and haul them during the winter months. During the season just closed the heavy snow in the southern portion of the province made it necessary to curtail the cut, and several operators found themselves without sufficient logs to keep their mills running during the summer. In order to supply their wants in this direction, several firms will have logging crews in the woods for the summer.

It is considered somewhat of a departure to cut logs during the summer months. The hot weather was supposed to slow up the work, and the hauling facilities were not considered so good as in the winter months. With modern appliances now available, it is said, the logs can be handled better in the summer than during the winter. It is said also that trees may be cut down closer to the roots when there is no snow to handicap the cutting operation.

AT WORK FOR CANADA BETWEEN JANUARY 1st AND JUNE 1st, 1923

The Canadian Forestry Association serves Canada from Coast to Coast. 181 public meetings were held in the past six weeks in the prairie provinces to help settlers establish shelter belts of trees about their farms and homes. Attendance totalled 18,081.

60 public meetings were held in Eastern Canada to organize the people as forest protectors. Motion pictures were used freely. One audience numbered over 2,000 persons.

The Forest Exhibits Car, a forest protection school on wheels, drew 50,000 people in April and May.

The Tree Planting Car, confined to the West, was equally popular.

From January to June, 78,000 copies of the Canadian Forestry Magazine have been performing an active educational service.

56,000 copies of our French newspaper "L'Ami de la Foret" have been distributed in forested districts.

100,000 copies of other varieties of forest protection literature have been carefully prepared and placed.

Hundreds of columns of newspaper articles have been written and placed in leading dailies and weeklies.

3,000 Boy Scouts have been made active allies of the Association's enterprises.

New motion picture films have been constructed.

The foregoing represent part of the educational service performed by the Canadian Forestry Association, a non-government, non-commercial society of progressive citizens.

R. H. CAMPBELL

Mr. R. H. Campbell who has been Director of the Forestry Branch of the Department of the Interior for the past sixteen years, has retired from active service. Mr. Campbell's work has brought him in close touch with the Pulp and Paper Industry. His sincere, delightful personality has won him a host of friends, who will regret the interruption of pleasant contact caused by his resignation. The editor is indebted to Mr. Campbell for much kindly assistance and the industry is grateful to him for years of devoted service and faithful endeavor in the field of forest conservation and the development of Canada's timber resources. His friends regret the serious accident which brought on ill health and retirement, but we are thankful he is still with us and hope he will live many years to enjoy a well earned respite from strenuous effort.

If a man could have half of his wishes he would double his troubles.

Technical Section

REVIEW OF RECENT LITERATURE

Akaline Processes

A-3 Bleached Straw Pulp. A. RETTORI. **Papeterie** 44, 1106-1109 (Dec. 25, 1922). Criticisms of some of the statements of Arnould's article. **Pulp & Paper** 20, 2022 (Dec. 21, 1922).-A.P.-C.

A-4 Some Causes for the Deterioration of the Color of Soda Pulp upon Ageing. C. S. HAMM. **Paper Trade J.** 76, No. 16, 47-48 (Apr. 19, 1923). The experiments described by the author show that in the ageing soda pulp the discoloration increases as the alkalinity of the pulp increases. Low alkalinity can be maintained by careful control of the washing operation and the use of sufficient sulphuric acid at the end of the bleaching operation.-A.P.-C.

A-8 F-3 Ash Utilization. S. ROSARIO. **Papierfabr.** 21, 126-127 (Mar. 4, 1923). The use of ashes from lignite, peat or wood in the pulp and paper industry is suggested. The author has successfully employed ashes for the production of straw pulp in South America.-J.L.P.

A-11 China Clay in Cornwall. W. TRETHEWAY. **Pulp & Paper** 21, 283-285 (March 15, 1923). Account of a visit to the Cornish clay mines of H.D. Pochin & Co., Ltd.-A.P.-C.

A-12 Casein and its Modification by Acid. E. SUTERMEISTER. **Paper Ind.** 4, 1224-1228 (Dec. 1922). The author investigated acetic, phosphoric, sulphuric, lactic, muriatic, phosphoric and muriatic, acetic and muriatic, lactic and muriatic and natural soured caseins. He determined solubility in borax, adhesive strength, viscosity, moisture, and ash, and investigated treatment with acids. He concludes that a muriatic casein can be made to give as satisfactory results as a natural soured one, and that it is probably the amount of acid used in the precipitation rather than the kind that determines the quality of the casein. The difference in behavior between acid-precipitated and natural soured casein depends on the ash content of the former. This can be reduced, by suitable treatment to the same value as that of natural soured casein. By properly adjusting the amount of acid used, the precipitation of the casein from the milk and its acid treatment can probably be carried out in the same operation, and the logical place to do this is in the casein factories. If necessary it can be done by the user, and if mechanical losses are avoided in doing this, the casein as usually weighed out could be treated with acid, and, after washing, cooked up to the normal volume without considering the loss in the process.-A.-P.-C.

Alkaline Pulping Processes

F-4 Process for the Removal of Liquor and Washing of Soda Pulp. FR. KRENN. **Wochbl. Papierfabr.** 54, 698-699 (Mar. 10, 1923). The pulp from a completed cook is blown into a diffuser and forces out most of the liquor retained by the pulp. A vacuum applied at the bottom of the diffuser facilitates this action. In this way the brown liquor is obtained in an undiluted condition for subsequent evaporation. The pulp is washed in the diffuser with either fresh or used wash water under pressure.-J.L.-P.

F-4 Evaporation of Spent Liquor in the Soda and Sulphate Processes. G. K. SPENCE. **Paper Trade J.** 76 No. 15, 209-213 (Apr. 12, 1923); **Paper Ind.** 5, 156-160 (Apr. 1923); **Paper Mill** 47, No. 17, 35, 40, 42 (Apr. 28, 1923); **Paper** 31 No. 26, 120-121, 128 (Apr. 18, 1923). A description of various types of equipment for evaporation of spent liquor in soda and sulphate mills, with a discussion of the importance of maintaining a high vacuum in multiple-effect evaporators. Results are given of the operation of evaporator rooms of four mills using Yaryan evaporators.-A.P.-C.

F-4 Comparison of Some of the Features of the Film and Submerged Types of Vacuum Evaporators. MARTIN L. GRIFFIN. **Paper Trade J.** 76, No. 15 213-233 (Apr. 12, 1923); **Paper** 31, No. 26, 56, 57 (Apr. 18, 1923). A brief discussion of some of the characteristics of each type, showing that there can be no standard practice but that each case must be viewed not only as a special problem in evaporation but in relation to its product and its relation to other features of the plant as a whole.-A.P.-C.

F-4 Evaporation of Pulp Waste Liquors. K. L. THUNHOLM. **Svensk Pappers-Tid.** 25, No. 13, (1922); **Paper** 31, No. 26, 149-156 (Apr. 18, 1923); **Pulp & Paper** 21, 204 (Feb. 15, 1923); **Paper Trade J.** 76, No. 13, 53 (Mar. 29, 1923).-A.P.-C.

F-4 Causticization of Soda Ash. J. HARROP and H. O. FORREST. **Ind. Eng. Chem.** 15, 362-363 (Apr. 1923). Experiments on a laboratory scale gave the following results: Slaking the lime before causticization increases the conversion but slightly and greatly reduces the rate of settling. Increase in the amount of lime increases the percentage conversion but decreases the rate of free settling. Increasing the time of causticization increases the percentage conversion and decreases the rate of settling. The percentage of conversion is unaffected by the character of the lime as long as there is present 10% excess lime. On the other hand, high-calcium limes give better settling rates than limes containing appreciable amounts of magnesium, and air-slaking produces lower settling rates. The physical properties of the lime, such as apparent density, and size of particles, influence the free- settling rate, the more granular and compact the particles, the greater the settling rate.-A.P.-C.

F-0 The Chlorine Process Discussed. The Manufacture of Pulp by the Chlorine Gas Process. **Umberto Pomilio. Chimie et Industrie** 8, 41-45 (July 1922); **Paper Ind.** 4, 1670-1672 (March 1923). **Pulp & Paper** 20, 840 (Sept. 28, 1922); **Paper rade J.** 75, No. 16, 54 (Oct. 19, 1922). **Use of Chlorine in the Manufacture of Paper Pulp.** C. ARDISSON DE PERDIGUIER. **Papeterie** 44, 866-873 (Oct. 10, 1922); **Paper Ind.** 4, 1672-1674 (March 1923); Pulp & Paper 20, 2047 (Dec. 28. 1922).-A.P.-C.

F-0 H-5 Continuous Process for the Production of Bleached Soda Pulp. A. OLIER, assignor to Société Anonyme des Etablissements A. Olier. Can pat. 227-859, Jan. 9, 1923. Same as Fr. pat. 523,871, V. Bernot and R. Fournier. **Pulp & Paper** 20, 462 (June 1, 1922); **Paper Trade** J. 74, No. 23, 95 (June 8, 1922).-A.P.-C.

F-0 The Chlorine Process for the Manufacture of Paper Pulp. RAYMOND FOURNIER. **Papier** 25, 481-490 (Nov. 1922). Early attempts at using chlorine for the manufacture of pulp are reviewed. The DeVains and Cataldi processes are described and their merits and demerits brought out.-A.P.-C.

F-0 Chlorine for Pulp Manufacture. ISMAR GINSBERG. **Chemical Age (N.Y.)** 30 (Nov. 1922); **Paper** 31, No. 3, 10-11 (Dec. 13, 1922). A review of the Pomilio (Cataldi) process for producing pulp from wood and grasses.-A.P.-C.

Bleaching

H-1 The Testing of Bleach Liquor. R. E. GEGENHEIMER. **Paper Mill** 47, No. 9, 14, 16 (Mar. 3, 1923). A description of the Mathieson bleach liquor testing apparatus. The pressure of oxygen liberated by the interaction of the bleach liquor and of hydrogen peroxide is measured by means of a mercury gauge which is calibrated in any convenient manner, preferably to read directly in grams of available chlorine per liter o fliquor. The gauge is calibrated at 20° C., and 760 mm., and tables are provided for correcting to this temperature and pressure when readings are taken under different conditions.-A.P.-C.

H-5 Bleaching Pulp at High Consistency. R. A. HAYWARD. **Paper Trade J.** 76, No. 15, 221 (Apr. 12, 1923); Paper Ind. 5, 161-162 (Apr. 1923). (Compare R. B. Wolf, **Paper Trade J.** 75, No. 22, 57 (Nov. 30, 1922). Results of mill scale operations with a Wolf bleacher are outlined. Best results were obtained when the bleaching temperature did not exceed 85° F. There was 10 to 15° F. rise in the bleaching due to the heat of the reaction, so that only in the most severe winter weather was any steam required to maintain the temperature. The bleach consumption when operating at 20% consistency was over 25% lower than at 6% consistency; so that either average strength can be obtained with low bleach consumption or else inferior grade wood can be cooked to give high strength with relatively low bleach consumption. Poor hemlock (some of which had lain in the pile up to 10 years) was put through the wood room without any special care in cleaning and a clean grade of pulp was made from it. Working on hard-bleaching stock, the overall shrinkage was 5.3% for hemlock and 4.04% for spruce, and the chemical shrinkage 4.3% and 3.11% respectively. From previous shrinkage tests made on stock bleached at thinner consistencies, a shrinkage of about 10% would have been expected. Tests with soda and sulphate stocks showed a low shrinkage and low bleach consumption as compared with results obtained when bleaching at 4% to 5% consistency.-A.P.-C.

H-0 Reduction of Bleach Cost by Chemical Control. GEORGE M. TROSTEL. **Paper Trade J.** 76, No. 17, 52 (Apr. 26, 1923). The important factors for producing easy-bleaching soda pulp are (1) Proper amount of alkali required for the particular wood so that without overcooking the process can be carried to the point when the complete removal of non-cellulose material is assured; (2) Complete removal of all black liquor and dissolved non-cellulose material. Bleaching can be accomplished more economically if the bleaching properties of the pulp are known, and these can and should be determined before the stock reaches the bleaching system. The most important benefits are: uniform color, no waste of bleach, and no over-bleached pulp.-A.P.-C.

Beating

K-4 Process for the Production and Purification of Pulp from Wood and Similar Material. E. SCHMIDT. Fr. pat. 546,556, Aug. 26, 1922. **Papier** 25, 541 (Dec. 1922). The material is treated with chlorine dioxide dissolved in a solvent of such a nature that the lignin is dissolved out after its transformation by the chlorine dioxide. Dilute acetic acid is suitable for the purpose. (Compare Schmidt and Duysen, **Pulp & Paper** 20, 676, Aug. 10, 1922; **Paper Trade J.** 75, No. 5, 54, Aug. 3, 1922; and Schmidt and Graumann, **Pulp & Paper,** 20, 1002, Nov. 16, 1922; **Paper Trade J.** 74, No. 26, 50, June 29, 1922).-A.P.-C.

K-4 Production of "Mechanical Cellulose." H. STEINHILBER. Can. pat. 227,795, Jan. 9, 1923. **Cyperaceae, gramineae** or **typhaceae** are subjected to a rubbing and pressing action whereby the parenchymatous cells are separated from the raw fibers and the latter are liberated by grinding or rubbing from the incrusting substance in the presence of water. This can be carried out in a beater in which the flybars and bedplate knives are rounded or blunted in such a manner as to avoid a cutting action. The material may be subjected to a preliminary natural or artificial retting process. The grinding or rubbing action is continued during bleachiing.-A.P.-C.

K-7 Heat Treated Steel is the Best for Beater Flybars and Bedplates. W. F. EBBING. **Paper Ind.** 4, 1715-1717 (March 1923). Brief discussion of the advantages of heat treated carbon and alloy steels for flybars and bedplates.-A.P.-C.

K-7 New Type of Beater. ARLEDTER. Fr. pat. 548,-578. The trough is preferably completely enclosed, and a static head is maintained at the inlet side of the beater roll by means of a vacuum, while pressure may be applied on the surface of the pulp at the outlet side. It is claimed that there is a great saving in power and that stock can be beaten at a consistency of 22% to 30%.-A.P.-C.

K-7 Practical Notes on Beater Operation. Wochbl. Papierfabr. 53, 3775-3778 (1922.) **Paper** 31, No. 22, 7-10 (Mar. 21, 1923). A discussion of the factors influencing power consumption, and especially of the nature of the raw materials. A method is described for comparing the efficiencies of beaters.-A.P.-C.

K-19 Raw Stock or Paper for Coating. NORMAN CLARK. **Paper Trade J.** 76, No. 15, 170-171 (Apr. 12, 1923); **Paper Ind.** 5, 153-155 (Apr. 1923); **Paper Mill** 47, No. 15, 222,224 (Apr. 14, 1923); **Paper** 31, No. 26, 61-62 (Apr. 18, 1923.) A discussion of formation, dirt, color, slack edges, thickness, fuzz, finish, curling and feel in raw stock for coating. A table is appended showing under each grade of coating paper the weight, furnish percentage, and relative sizing of papers required for each purpose.-A.P.-C.

K-23 Method of Marbling Cheaper Grades of Paper. F. P. REED and C. NELSON, assignors to American Coated Paper Co. Can. pat. 227,077, Dec. 12, 1922. The color spattering devices (brushes or bristles which take the color from a roll rotating in a color bath, and which flick it on to the moistened paper) are arranged so that the various colors (two or more) are delivered simultaneously to the same area of the paper. Some of the color is thus delivered in the direction of travel of the paper and the remainder in the opposite direction.-A.-P.-C.

STATISTICS OF PAPER INDUSTRY TO BE COMPILED BY A. P. & P. A.

The American Paper and Pulp Association has taken over the task of collecting statistics on the paper industry, abandoned by the Federal Trade Commission. This was the announcement made to the paper industry this week by Dr. Hugh P. Baker, Executive Secretary of the Association, and plans are now being formulated for doing this work.

The success of the effort will be dependent, of course, upon the co-operation of the mills of the country, but as they have previously reported to the Federal Trade Commission, it is not thought likely that they will be less willing to file the same statistics with an organization of their own industry.

The governmental form of report will be used in making reports to the Association, the only difference being that the report blank will carry the name of the American Paper and Pulp Association instead of the Federal Trade Commission.

The details of the collection of the statistics are rapidly being worked out but of course there will be some delay in getting out the figures for June.

Inasmuch as the American Paper and Pulp Association is a federation of associations representing the different paper making groups, the collection of the statistics will be done as far as possible through these group associations, and the News Print Service Bureau which, as it includes Canadian mills also, is not a member of the American Paper and Pulp Association. The newsprint figures will be furnished the American Paper and Pulp Association through the News Print Service Bureau, exactly as is planned for the Association's affiliated groups.

This method of collecting the statistics, therefore, will avoid the duplication of reports by mills belonging to the group associations, but will continue the same form of reports previously made by the outside mills to the Federal Trade Commission. To this extent the collection of the statistics by the American Paper and Pulp Association will be a simplification of the previous method of compiling production figures for the industry.

TRADE SAGS A BIT IN JAPAN

Owing to the high prices of news print papers in Japan during the early part of the year traders finding a goodly margin of profit by importing foreign products, resorted to overseas markets. As a result, the importation of foreign papers which had shown a declining tendency during the latter half of the previous year owing to a sagging market and to strikes in Sweden and Norway, has again become brisk.

The quantity and value of imports since January were as follows:

	Quantity * Kin	Value † Yen
January	4,436,594	824,109
February	4,175,532	856,266
March	5,802,721	1,072,126
April	6,612,254	1,209,615

* A "kin" is equal to 1.323 lbs.

x One yen equal to about 50 cents.

The domestic paper manufacturers who raised their prices foreseeing the lack of supply and the increase of demand within the country, now met the competition of the foreign goods which were threatening the sales of the domestic makes.

The mills have been working in full swing, but, owing to the element just mentioned, the supply has overtaken the demand and the stocks of the paper manufacturers are growing larger and larger. The decrease of sales was most significant during the month of April. The following is a list of the quantity of output against sales for the months, beginning January:

	Output lbs.	Sales lbs.
January	57,119,000	55,100,000
February	57,637,000	63,941,000
March	61,624,000	71,353,000
April	63,893,000	61,169,000

As a result of the situation, the paper manufacturers here not only are unable to maintain the prices set by themselves when the consumers were in the hole but have to agree at lower prices to counteract the competition of the foreign goods. Besides, at the present state of affairs it is likely that the paper mills will be obliged to limit their output to a certain extent until such time as to start work in full blast.

NORWEGIAN STRIKE IS SETTLED

The strike in the Norwegian Pulp and Paper mills has been settled, a telegram to that effect having been received by the Canadian Pulp and Paper Association. According to mail advices, the trouble was the result of sympathetic action in connection with a dispute regarding a few men engaged in floating logs, the opportunity being taken to press for demands made for a number of years.

The strike was followed by a lockout, and presumably this has been one factor in the settlement of the dispute.

The result of the trouble was the raising of prices in England.

Norway is an important producer of paper and pulp. In 1922 her exports of printings amounted to 163,224 tons (short) while "packings" amounted to 74,918 tons. The United Kingdom is the principal market for printings and in 1922 she received 35,000 tons under this classification, followed by France with 30,000 tons; the U. S. A. with 11,000 tons; Australia 16,500 tons; India 10,000 tons and China 5,500 tons.

Of Norwegian wrapping paper in 1922, Great Britain took 37,000 tons or nearly one half of the total exports; China was next with 8,000 tons, Australia, 6,600 tons and the U. S. A. and France about 6,000 tons each.

In the first four months of this year Great Britain's imports of newsprint from Norway amounted to 6,753 tons, while imports into the U. S. A. were 14,328 tons.

Last year Norway exported 224,009 tons mechanical pulp (dry wt); 129,000 tons bleached sulphite; 71,000 tons unbleached sulphite and 16,000 tons sulphate.

For the first four months of this year the U. S. A. imported from Norway 17,572 tons mechanical; 8,292 tons unbleached sulphite; 22,816 tons bleached sulphite and 4,200 tons sulphate.

Total imports into the U. S. A. from Norway in 1922 were 9,227 tons mechanical, 32,630 tons unbleached sulphite; 43,852 bleached sulphite and 9,856 tons sulphate.

PULP AND PAPER NEWS

Mr. Norman R. Lang, managing director of the Powell River Company Limited, Vancouver, B.C. was in Montreal last week.

Mr. T. J. Stevenson of the Riordon Sales Corporation, Limited, Montreal and Mrs. Stevenson are now holiday-making at Old Orchard.

Mr. Edwin Crabtree, Montreal representative of the Bathurst Company Limited and the Bronson Company has been on a business trip to New York, Philadelphia, and other American cities.

Sir Frederick Becker, of Becker and Company Limited, London, England, is about to pay another visit to Canada. This is no doubt in connection with the projected extension improvements of the mills of the Bay Sulphite Company and the Chicoutimi Pulp Company.

The Edwards Lumber and Pulp Company, Limited, which has purchased the Colonial Lumber Company's property, propose to erect a groundwood mill at Pembroke, Ontario.

The first caterpillar type of continuous grinder, is being installed at the Kenogami mill of Price Bros. This grinder, which is claimed to have several advantages as compared with the magazine type, is manufactured by the Waterous Engine Works, Limited, Brantford, Ontario.

Brig. Gen. J. B. White, forestry director of the Riordon Company is recovering from a surgical operation.

The selection by the new Premier of Ontario, Howard Ferguson, of James Lyons, of Sault Ste. Marie, Ont., as Minister of Lands and Forests, recalls the fact that seventy years ago, five brothers living in England decided to take advantage of the opportunity of the financial advantage that Canada held out, and that the father of the new cabinet minister was the only one to survive shipwreck on the way out. James Lyons was born and raised on the farm of his father near Virginia, Ont. He lived the usual life of the farmer up to the time he was nineteen, when he started out for himself. The Soo attracted him and he landed there twenty-three years ago. For five years he was superintendent of one of the Lake Superior Corporation's plants, but resigned to engage in the grocery business for himself. He was successful as he has been in all the business enterprises he has engaged in since. Realizing the future value of Sault Ste. Marie and Steelton real estate he took advantage of every opportunity to invest his earnings in it, with the result that today he is rated as one of the financially strong men of the community. Municipal ownership of public utilities is his slogan. He was for four years mayor of Steelton, before its amalgamation with the Sault, and for the past two years has been an alderman of Sault Ste. Marie. He has been president of the Board of Trade for two years and is a prominent Rotarian.

During the month of June the Abitibi Power and Paper Company turned out approximately 12,270 tons of newsprint, being an average of 471.9 tons per day. This average is over eight tons per day higher than the former record made during the summer of 1922. The blue ribbon week was the 7-day period ending June 30, when an average of 477.6 tons of paper was turned out, or 3 tons per day higher than the best previous record.

The tug G. R. Gray of the Spanish River Pulp and Paper Mills, Limited, made the trip from Puckasaw to Sault Ste. Marie, Ont., a distance of 150 miles, in twelve hours, in an effort to save the life of Chris Thompson, who was seriously ill. Thompson, however, died, after the arrival of the tug. The trip is considered a record one.

The Reforestation Committee of the York County Council has decided to purchase Lot 28, concession 8, Whitechurch, for purposes of reforestation. The land, which bears considerable timber, is 197 acres in extent. The price is $4,000. The committee recommended that 200 acres of such land be purchased every five years.

The National Pulp Corporation, Limited, Hamilton, Ont., has been granted an Ontario charter with power to carry on the business of re-pulping paper and rags according to a secret process and formula of Judson Culp and to acquire exclusive rights for the Dominion of Canada. The authorized capital is $800,000 and the provisional directors are Judson Culp, O. A. McPherson and A. R. McPherson, Hamilton.

Boxboard Products, Limited, has been incorporated at London, Ont., to take over the assets of the Security Egg Case Filler Co., Limited. The company, which is capitalized at $150,000, is also empowered to manufacture pulpwood and paper and to engage in printing and lithographing. The provisional directors are W. R. Nickle, R. D. White, G. T. Shipman, T. J. Murphy and A. H. Murphy, all of London.

John Ebbels, of the American Writing Paper Company, Holyoke, Mass., was a Toronto visitor last week.

J. Collins, of the B. D. Rising Paper Company, Housatonic, Mass., was a caller on the Toronto paper trade last week.

John Hewitt, head of Paper Sales, Limited, Toronto, has returned from a business trip to Montreal.

F. C. Clarke, treasurer of the Mattagami Pulp and Paper Company, Limited, head office Toronto, which is still being operated by an official receiver, states that the operations of the organization at Smooth Rock Falls, Ont., are now proceeding on a satisfactory basis. The demand for pulp continues good and the operating of the mill at capacity is reducing high cost inventories. When liquidation of the present supplies of wood are complete and new wood is obtained at the lower costs now prevailing, the company will be able to make a reasonable profit, especially if the selling price continues to show improvement. The time is approaching when an effort will be made to re-finance the company's business. For the present most of the holders of bonds and debentures have handed over their securities to protective committees who are working together in their interests.

Jobbers handling the Howard Smith paper lines were supplied last week with new price lists dated July 4. There are no drastic changes in prices and adjustments are confined to those previously outlined in these columns.

W. H. Dixon, managing director of Peter Dixon & Co., large newsprint manufacturers in Great Britain is now in Canada. Last week, Mr. Dixon visited a number of the Ontario newsprint and other paper mills, including those in the Niagara district.

George Carruthers, head of the Interlake Tissue Mills, Limited, announced in Toronto last week the appointment of Joseph Cathcart as superintendent of the company's mill at Merritton, Ont., succeeding Peter Rausch, who recently resigned owing to ill health. Mr. Cathcart is an expert paper maker of wide experience, especially in color work, he having been associated with the Crystal Tissue Mills of Middleton, Ohio, for a number of years as general superintendent.

W. D. Carmichael, of Sydney, Australia, who is just now in Canada, was in Toronto last week after having been to Ottawa where he interviewed the Dominion Government in regard to reciprocity of trade between Canada and Australia with special reference to paper products.

The proposed site for the plant of the Great Lakes Pulp and Paper Company, Fort William, was again to the fore last week when application was made to the Ontario Government by the company and granted, for formal endorsation of a plant site three miles up the Kaministiquia River, on the north bank. In view of the agreement entered into with the company which authorizes plant construction "on the Mission site or other site" the Government regarded itself in honor bound to approve it. A delay in definitely fixing the site was asked pending a hearing of the interests of Shunia and other Head of the Lakes municipalities. According to Government understanding of the Great Lakes Company application, the prompt approval by the Government of the new site means an immediate commencement of construction upon the big pulp and paper plant which is expected to put the Nipigon power development upon its feet financially. Shunia, with other Head of the Lakes municipalities, entered into keen competition for the Great Lakes industry, and won out in a bitter fight before the Private Bills Committee in the matter of transfer of certain lands from Port Arthur upon which the industry was to have settled with certain taxation advantages.

A pleasant little function took place on July 7 at the Port Arthur mill of the Provincial Paper Mills, Limited, when the employees of the plant were presented with the shield of the Ontario Pulp and Paper Makers' Safety Association, which is incorporated under the Workmen's Compensation Act. The shield is for annual competition, and is held by the plant having the fewest accidents during the year. The Port Arthur plant record is 20 non-fatal accidents, involving a loss of 336.5 work days, which is equal to 1.75 days per full time worker. The shields are given in two classes, one for plants of 200 or more employees, and the other for plants with less than 200. Both were won by the Provincial Mills, Class A by Port Arthur, and Class B by the Georgetown Division.

Further information concerning the Atlantic Pulpwood Company, Limited, which was incorporated on May 5 under the Companies' Act of the Province of New Brunswick for the purpose of carrying on business in pulpwood and timber lands, indicates that the company represents a combination of the business formerly carried on by W. Roy Smith and Grey B. N. Keith. Both of these gentlemen have been engaged in the pulpwood business in Nova Scotia and New Brunswick for several years. The company proposes to handle cargo, as well as rail shipment wood and is maintaining a head office at St. John and a branch office at Annapolis Royal, N.S. The capitalization is $49,000.

Historians in the Niagara district recalled the fact on July 13 that just twenty-five years ago Carl Riordon, of the Riordon Paper Mills at St. Catharines, Ont., concluded arrangements with the municipality of Hawkesbury by which a very extensive pulp and paper mill was to be erected at Hawkesbury. According to the papers of a quarter a century ago "the establishment will cost in the neighborhood of $200,000 and will employ about 100 hands. Mr. Riordon has also purchased extensive timber limits from Hon. J. K. Ward."

Hon. T. W. McGarry, former Provincial Treasurer of Ontario denied the report in Toronto that he was severing his connection with the Whalen Pulp and Paper Company of British Columbia in order that he might become Financial Comptroller of Ontario, a newly-created position which some one is to fill in the Ferguson administration.

Cheques were mailed out from the head office in Toronto of the Spanish River Paper Mills, Limited, last week, to shareholders of record June 30. The payments represented dividends at the rate of 1¾ per quarters, or 7 per cent per annum.

J. G. Gibson, secretary of the Spanish River Pulp and Paper Mills, Limited, head office Toronto, is spending a month with his family at Port Kewatin.

C. W. Anderson, superintendent of the Kinleith Paper Mills, St. Catharines, Ont., recently addressed the Commercial Stationers' Association of Toronto, giving a description of the various methods of paper manufacture, with special reference to the Kinleith papers. It was pointed out by Mr. Anderson that the processes may vary to some extent, according to the different classes of paper produced by various plants, such variations applying to makes ranging from blotting paper and newsprint to book and commercial paper for other purposes.

C. W. Graham, president of the Buntin, Gillies Co., Hamilton, Ont., has returned from a three months' trip to Great Britain and the Continent.

The Canadian Pulp and Paper Association will cooperate with the Federal Government at Ottawa in exhibiting productions of the industry at the British Empire Exhibition which is to be held in London, England, in 1924, starting in April and continuing for six months. All the Canadian paper companies are being invited to send samples which will be suitable for export trade. There will also be a varied display in the Federal exhibit of the commercial woods of the Dominion, some in the rough and others in the finished state. The lumbermen and pulp and paper men are desirous of seeing that these lines of activities are well represented.

It is not the revolutions which destroy the machinery, but the friction.

UNITED STATES NOTES

The property of the bankrupt American Strawboard Company will go on the auction block this week in Chicago, according to an announcement of Frank M. McKey, trustee in bankruptcy. The property to be sold includes vacant real estate at Chesterton, Md., the plants of the Company in Circleville, Ohio, Noblesville, Ind., Quincy, Ill., Wilmington, Ill., Winchester, Va., real estate at Barberton, O., Tiffin, O., all raw material goods in process of manufacture, etc.

In a survey of the employment situation made public by the Department of Labor last Friday, the paper and printing industry showed the largest decline, with a decrease of 4.4 per cent. The figures were based on reports from 1,428 concerns employing 500 or more persons each and in sixty-five industrial centers. The comparisons take June employment as against the reports for May.

Production statistics compiled from a countrywide canvass by the Federal Reserve Board indicate that the industrial activity of the United States thus far during 1923 has been the greatest in history, except for the last three weeks. The rate of output of manufacturing plants dealing in seven basic lines averages six per cent above the rate of output in 1919, a boom year. The board's canvass dealt with the manufacture of foods, tobacco, lumber, paper, cloth, steel and the refining of petroleum. The general average of production for all commodities was greatly exceeded by paper, textiles, steel and oil. The greatest rate of increase over the 1919 production was shown by petroleum refineries which reported an average increase of 51.4 per cent. in output in the first four months of 1923. Paper came fourth in the list with an average increase of 15.5 per cent.

A contract for the construction of a $2,000,000 paper mill near West Monroe, La., has been awarded to the Morton C. Tuttle Company of Boston, Mass., by the Brown Paper Company, Inc., of Monroe. The latter concern was recently organized by pulp and paper manufacturers of Orange, Texas and vicinity.

The Waste Paper Merchants Association of New York, representing the bulk of the $15,000,000 waste paper packing industry of the city, has petitioned the New York State Attorney-General to bring an action vacating the charter of the Salvation Army on the ground that as a religious and charitable corporation it is violating the provisions of the Act under which it was created by conducting an extensive waste paper business. The petitioner is Charles McBride of the Wilson Paper Stock Company, as chairman of the Waste Paper Merchants' Association committee on complaints against the Salvation Army. S. D. Spector, attorney for the merchants explains that the association has no quarrel with the Salvation Amy as long as it collects paper in its house to house canvass for nothing, but the members haven't a chance to compete when they go into the market for profit. The Army pays no taxes of any kind and obtains much of its unskilled labor in exchange for a night's lodging or for a very nominal sum. The dealers, on the other hand, said Mr. Spector, are obliged to pay $5 a day for men and women to sort materials.

The Salvation Army is now reconstructing a seven story building in West Forty-eight Street, New York, with $30,000 obtained by salvaging waste paper from the households in the city. This "house that waste paper is building," as the Army calls it, will contain dormitories and working facilities for eighty "down and outers" at a time and will include a complete store in which the poor will be able to buy salvaged and repaired clothing, furniture and household goods at nominal prices. The Army has two such institutions in New York now where the inmates support themselves by going from house to house salvaging waste paper and by repairing discarded household goods.

Within the last few years the use of waterproof building paper has greatly increased. A fact which has always been recognized by architects now seems to be much more generally recognized by builders, that a few dollars expended for good waterproof building paper actually keeps out drafts and dampness, reduces fuel bills and has a tendency to preserve the life of the whole structure of the building.

An instance of the efficacy of the sprinkler system was shown in the recent fire in one of the Knowlton Brothers Paper Mill buildings at Watertown. Fire broke out in bales of waste paper on the top floor of this building. It seemed a big fire was imminent and preparations were made by fire-fighters to battle with blaze which it was thought might end in a gutted building. However, the plug on the automatic sprinkler melted and a deluge of water extinguished all signs of flames, leaving only heavy clouds of smoke for a time. Due to this the blaze was limited to an area of about 50 square feet. The firemen were frank in declaring that had it not been for the sprinkler system the entire top floor of the structure would have been a mass of flames before an adequate fight could be launched, and that it might have been difficult to prevent the fire from spreading throughout the entire plant.

The store house of the A. L. Adams Paper Company, Baldwinsville, Mass., was burned last Friday. The frame building contained a large stock of finished and unfinished paper and a considerable amount of sulphite. In the absence of Mr. Adams no one connected with the company was prepared to estimate the loss.

Forest fires sweeping up the western slope of the Bitter Root Mountains the latter part of last week destroyed the towns of Mace and Burke, east of Kellogg, Idaho. A thousand persons are homeless in the two towns, one of which was completely wiped out by the fire and the other all but destroyed. Damage was estimated at between $300,000 and $400,000.

If you want to know who the Pulp and Paper Mill Superintendents are and the good work they are doing, get a copy of the annual program from Secretary, P. C. Barrett, 7 McNair Bldg, Kalamazoo, Mich. This a very fine piece of work, both as to appearance and contents.

We fail to get much benefit from many blessings because we do not try to impart them to others.

NEW LINE OF CANADIAN BUILT STEAM DRIVEN AIR OR GAS COMPRESSORS POSSESSES MANY UNIQUE FEATURES

A new line of steam driven air or gas compressors ranging in size from 67 to 1083 cu. ft. piston displacement per minute has recently been placed on the market by the Canadian Ingersoll-Rand Company Limited, 260 St. James St., Montreal, Canada.

These machines, known as the class "FR-1" are the steam driven companions of this company's class "ER-1" Belt Driven Compressors and like the latter are of the single stage, straight line centre crank dust and dirt proof type with automatic lubrication of both running parts and compressing end.

They embody every refinement of modern compressor design including a number of features which make them as nearly automatic in action as any machine of this type can be expected to be. This is an important consideration in any compressor but is even more essential in the case of small and medium sized units which are often operated in isolated locations where but little attention can be given them. Large machines on the other hand are generally located in a central power house under the supervision of an expert engineer. For this reason the class "FR-1" Compressors are recommeded for use in small mines, quarries, on contract jobs, in foundries, machine shops, industrial plants, etc., as well as for use as auxiliaries in large power plants.

In general the Class "FR-1" Compressor consists of a plate valved compressing cylinder direct-connected to steam engine with balanced piston valve and automatic cut-off control, a design which makes it possible to operate with high pressure and superheated steam as well as the moderate pressures more common in the past. This feature alone ensures a steam economy at all pressures not heretofore attainable.

The main frame as previously mentioned is of the enclosed type the bottom part of which forms a reservoir for the combined splash and flood lubrication system. It is fitted with removable side and crank end covers, which are not bolted on, but are retained by lips on the frame casting. Removal of these covers permits inspection or adjustment of all running parts. The cross-head guides are of the bored type and the design of the frame provides for an oil stuffing box near the cylinder end of the frame, which prevents any chance of crank case oil entering the compressing cylinder end of the main frame and in the trunk piece interposed between the steam and air cylinders provides for adjustment of all stuffing boxes when the machine is running.

The main frame and trunk piece are mounted on a substantial cast iron sub-base which lends rigidity to the entire structure, makes the machine a complete self-contained, accurately aligned unit and also forms a support for the single rocker arm which guides the valve rod.

There are no guide blocks or other sliding surfaces in the piston valve gear.

The main bearings are of very heavy construction and are provided with removable die-cast shells or liners of genuine babbit metal which can be removed and renewed in a few seconds at small cost. Due to the area of the bearings and the complete circulation of oil through them at all times, however, the shells last for very long periods without appreciable wear.

The crank-shaft and connecting rods are solid one-piece drop forgings accurately machined and heat-treated. The connecting rod is of the solid end type with renewable and adjustable boxes in both cross head and crank shaft ends. The crosshead is of the cylindrical type, of box construction with adjustable bored and turned shoes.

Pistons are of the box type with broad faces and are securely fastened to a turned and ground steel rod.

Oil is distributed to all of the running parts by throwers on the crank webs which lift or throw the oil against baffles from which it runs to all wearing surfaces. This system, now widely used was originated by this Company more than twenty years ago and is probably the simplest, most effective cleanly and economical ever devised.

Lubrication of steam and compressing cylinders is provided for by a double compartment adjustable sight feed mechanically operated lubricator.

The piston valve is provided with two piston rings at each end and operates in a renewable bushing. With this type of valve there is no rapid wearing or cutting and the valve chest stuffing box is only subjected to exhaust pressure as steam is admitted to the centre of the valve and exhausted from the ends.

Regulation of Class "FR-1" Compressors is regularly provided for by an Ingersoll-Rand "Wide Range" Automatic Cut-off Flywheel Governor and either "A-39" Inlet or the new Ingersoll-Rand "Free Air Unloader."

The Fly Wheel Governor is somewhat similar to those used on high speed automatic steam engines and varies the point of cut-off of the steam in the steam cylinder in accordance with variations in boiler pressure or in the load. This governor provides for speed adjustment for anything between full and one half speed while the "A-39" Inlet of the "Free Air Unloader" governs the amount of air compressed according to the demand. Other combinations are also furnished for use under special conditions

Another feature of these machines worth attention is the ease and rapidity with which they can be converted to belt drive or used as a combined belt and steam driven unit. Due to the extent of hydraulic electric development in Canada it sometimes happens that local conditions may make it advisable to change over to motor drive or to use a combination of the two for stand-by purposes. This can be more readily accomplished on these machines than any similar type.

The Canadian Ingeroll-Rand Company also announce their bulletin K-312, describing these machines which are produced at their Sherbrooke plant. This catalogue contains 28 pages and numerous illustrations covering these machines and should be of value to anyone interested in steam driven compressors for compressing air or commercial gases.

The Canadian Ingersoll-Rand Co., Limited, Que., have just issued a new descriptive bulletin covering their Cameron double suction, volute centrifugal pumps. The illustrations are numerous and clearly set forth the special features of these pumps, while the text contains much useful information on the mechanical details, tests, dimension table and part list. The book is known as No. 7350-C, and will be gladly forwarded to any interested reader on application.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, July, 17. — Locally, the paper trade is on the slow side, and some jobbers have complained of the difficulty in securing orders of any appreciable volume. Besides that, collections in the paper industry and also in other lines are poor. This is true of many places in the province, and some travellers state that it has been found imperative to curtail credits until the amounts now owing are reduced.

Taking a wider view of conditions as they are likely to affect business in the near future it is satisfactory to note that the crop reports from the West are very optimistic, a record harvest being predicted. Should the expert opinions prove to be true, we may look for a revival in the West, and increased buying of Eastern commodities.

The newsprint mills are busy, and so far there is no indication of an appreciable falling off in demand which usually marks the summer. The industry is on a very firm basis, and will be able to take care of any additional tonnage which will come on to the market in the near future.

In other lines the mills are fairly well supplied with orders. A feature of the week is the reduction of about $10 per ton in boards, the prices now being: Chipboard $65; strawboard $65; filled board $80; single manila lined $85; double $90. American prices have later dropped, and there is an inclination to invade this market in a more aggressive fashion.

With regard to the pulp section, groundwood continues to be firm, with only a small amount on offer. Some Canadian mills are idle, partly for lack of water and partly because of wood shortage. Bleached sulphite is maintained at from $90 to $100, according to grade. The chances are that the pulp market will be fairly steady during the balance of the year. The industrial troubles in Scandinavia counterbalanced any chances of an over supply of pulp, and have made for firmer markets, but the strike is reported to be over.

There is a fair demand for pulpwood at unchanged prices. Dealers interested in the sale of wood to American mills are concerned at the prospect of an embargo on the export of the wood. Some of them have considerable stocks, and they naturally feel that they should receive long notice of any intention to enforce an embargo. Some Canadian mills, particularly those with American affiliations, are opposed to a prohibition, principally on three grounds. One is that it will restrict the supply of wood to their American mills; a second that it will provoke retaliation, possibly in the form of tariffs on pulp and paper, thereby imperilling Canadian industry; and the third, that an embargo will force more American mills to locate on this side, thereby increasing the production of newsprint to a point which may upset the market and force down prices. It is argued that such new mills will be of a more efficient type than those which may be displaced in the States, the result being a greater volume of tonnage for which it will be difficult to find customers.

Ontario Market News

Although the Ontario paper trade is still suffering more or less from lassitude the fact remains that many of the jobbers were favored with better business during the early part of July than they were at the beginning of June. The testimony of most of the distributors, however, is that trade is spotty and that a good week's volume of business is usually followed by a falling off in orders, while no month this summer has bulked as large as was desired or expected. That there will be any great improvement until the holiday season is over is not generally looked for and some paper men are inclined to the view that it will be a case of hang on until September when all lines of trade will regain their old activity. While the paper trade generally in Ontario has been quiet this summer it has not been nearly so depressed as some other lines, for, despite the quiet period in trade generally there has been enough paper consumption to keep both mills and jobbers operating, although at considerably reduced capacity. Every manufacturer and every distributor apparently has been able to line up a fair share of business and while the orders individually have been small they have bulked sufficiently large to keep the mills running and the jobbers operating, if on a reduced basis. At the present time it is apparent that jobbers' stocks are low and it is certain that they are buying very cautiously.

Mills report only a fair amount of business passing and although some of them have orders ahead they are not booked very far in advance. However, there is sufficient business in sight to keep book, bond, ledger, tissue and other mills operating, although it is admitted that orders are not flowing in very freely just now. There has been some improvement in the paper box industry although business in this line has not yet reached the volume enjoyed a few months ago. Manufacturing stationers and envelope manufacturers are doing a fair business and a steady uotput from the tissue and toilet mills is finding a fairly ready market. There has been some improvement in the paper box industry although business in this line has not yet reached the volume enjoyed a few months ago. Manufacturing stationers and envelope manufacturers are doing a fair business and a steady output from the tissue and toilet mills is finding a fairly ready market. There is also a slightly improved condition in the wrapping and kraft paper departments which have been running light of late.

PULP. — Groundwood pulp is holding fairly firm although one prominent buyer in the Toronto district is responsible for the statement that both the manufacturing mills and the buying paper mills are increasing their stocks under the impetus of good water conditions for pulp output. Makers of chemical pulps are having no difficulty in disposing of their product although generally speaking the market is quiet. Groundwood is quoted at $38.00; bleached sulphite at $90.00 and up; unbleached sulphite at $65.00 and news grade around $60.00.

DROP IN BOX BOARD. — Ontario jobbers and

paper box manufacturers have been advised by the paper board mills of a $10 a ton drop in board which is now in effect. This applies to all the grades and is largely due to the reduced price of waste paper and also to some extent to American competition. The new prices now in effect are as follows: chipped board, $65.00; straw board $65.00; news vat lined, $75.00; filled pulp board, $80.00; folding pulp board, $90; white patent coated news back, $110; white patent coated machine back, $120.

NEW YORK MARKETS

New York, July 14. (Special Correspondence) — While latest available figures show that the statistical position of the paper industry in the United States is exceedingly strong and that mills are operating at a surprising rate of capacity for this time of the year, there is no gainsaying that retail demand for most kinds of paper is much quieter at present than it was a few weeks ago. Consumers have let down in their buying to a pronounced degree. Orders are placed today only when the need for paper is pressing, and there is little disposition among buyers to anticipate. However, this applies only to certain kinds of paper. Newsprint is wanted in record tonnage, and there is a steady movement of large volume of book papers. Doubtless the movement of these descriptions of paper toward contract customers is exceeding anything the industry has ever before witnessed at this season, and of course the heavy production of news and book papers serves to send mill output figures for the industry as a whole up to high levels.

Newspaper publishers are taking all the newsprint they have coming to them on contract and it is nothing unusual for consumers to come into the open market for additional supplies. Spot lots of print paper are far from easy to locate and sellers in a majority of instances are demanding premiums in price. Sheet news also is wanted in good quantities and ruling prices are close to the basis prevailing on roll news. Moreover, a good many mills are not producing sheet news, having all that they can do to fill their commitments in roll news, and available supplies consequently are small, explaining the firm position of prices.

There has been a little softening of prices on some lines of book paper. This has been due, it would appear, not to any decrease in the demand, but to the fact that certain mills, which depend largely on the transient trade for their business, have been wanting orders and have lowered quotations slightly to wean away business from competitors. Machine finished book paper is reported available at around 6.75 cents a pound f.o.b. New York, with some inferior qualities offered by manufacturers down to 6 cents. Most book mills are well provided with contract business and are not obliged to accept additional orders at the lower prices since they are already finding an outlet for their production.

Coated book papers are steady. Quotations range from 8 to 11 cents per pound f.o.b. New York, depending on the grade of paper, and it is reported that coaters are kept fairly busy, having a good volume of business on file.

The wrapping paper situation is far from favorable, from the domestic manufacturer's point of view. Imports of kraft wrapping from Europe are arriving in just as large tonnage as at any time during the past year; if anything, larger quantities have come in recently than at any other period. Importers and jobbers are filling their orders from department stores and other retail merchants almost exclusively with foreign paper, and the domestic producer is very nearly shut out of the running. It is a matter of price, pure and simple. The Swedish and German paper manufacturers are shipping wrapping to the States to be distributed to consumers at cheaper prices than are quoted by American mills notwithstanding the original tariff on wrapping paper and the extra duty recently imposed by the Government in an effort to protect the home industry. Were it not for converters it is problematical what would happen to the domestic kraft paper mills. Manufacturers of kraft in the States, it is understood, are managing to keep occupied on orders from paper converters but otherwise they are securing little business. One of the leading kraft manufacturers is reported to have reduced his price to 6.50 cents a pound New York on No. 1 domestic kraft; the foremost producer, however, is said to be still quoting 7 to 7.25 cents.

There is little doing in manila papers and quotations are around a basis of 5.75 cents a pound on No. 1 manila. Rope papers also are in slow demand.

Tissues are moving in small quantities chiefly though quotations show no changes of note. No. 1 white tissue is quoted in New York at 85 to 90 cents per ream, and jobbers here are reported to be fairly well stocked and to be placing few orders of consequence with mills.

There is a fairly steady tone to box board quotations. Plain chip and news board are quoted by eastern mills at $57.50 a ton f.o.b. New York, with some manufacturers asking a differential of $2.50 or $60 a ton on news board. One reason for the steadiness in boards in the face of the light demand recently is said to be that a majority of mills have been closed for inventory and repairs, and another is that waste paper is showing signs of advancing in cost so that board producers have been prone to maintain prices of their product.

GROUNDWOOD.—There is not much activity of an important character in mechanical pulp. Current demand is strictly of the hand-to-mouth variety, consumers are coming into the market when in actual need of supplies and are even then seldom ordering other than pulp necessary to cover their direct requirements. The slow demand, coupled with the heavy output, naturally makes for easiness in prices, and it is a question as to just how low buyers could operate. Domestic grinders generally quote about $35 a ton at producing plants for prime spruce groundwood for prompt shipment, bt is apparent that purchases could be made at less, and it is stated that some Canadian sellers are offering groundwood down to $30 f.o.b. grinding mills. If newsprint production keeps up at its present rate, and there seems every reason to believe that it will, and if the usual dry spell develops later this summer, ground wood prices will likely strengthen in the next few weeks; in the meanwhile there is little apparent reason for the market to improve its quotable position.

CHEMICAL PULP. — The strike of workers in the Norwegian pulp and papers mills is over. A settlement was reached early this week, according to cable advices received in the New York trade, and it is understood that mills are to resume operations at once, thus bringing the stoppage of pulp production in that country to an end after a shutdown of about three weeks.

Locally there is a lack of feature in chemical wood pulp. Demand from paper mills is admittedly slow and yet it is asserted that in the aggregate a fair movement of supplies toward consumption is in progress. New York pulp importers have their salesmen out on the road calling on mill customers, and it is understood they are corralling a fair volume of orders, thereby inferring that papermakers are beginning to show renewed interest in pulp. No changes of consequence are reported in quoted prices. The tone is steady and many on the selling side of the trade expect a stiffening of values within the next few weeks.

RAGS. — Roofing rags continue to exhibit a firm price tone and there has been a further strengthening of quotations this week. Mills have paid 1.40 cents per pound for No. 1 roofing stock f.o.b. New York, and 1.25 cents for No. 2 packing, and it is apparently becoming somewhat difficult to buy additional lots at these rates since dealers lay much stress on the trouble they are having in locating rags among packers and are bent on getting higher prices.

Old rags in general display a firm price tone. Whites are wanted in better quantities and in a larger number of directions than they were several weeks ago, and thirds and blues are marked by a better inquiry. Repacked blues of country origin are fetching about 2.75 cents a pound at shipping points, and miscellaneous packing for blotting and fibre paper mills are selling freely at 2 to 2.25 cents a pound at dealers' points. New cuttings are in slow demand though consumers are absorbing supplies here and there when in need of such rags or when finding accumulations available at favorable prices. No. 1 white shirt cuttings are quoted by New York dealers at 12.50 cents a pound or higher f.o.b. this city, unbleached muslins at 11.50 cents, blue overall cuttings at 8 cents, light silesias at 8 cents, fancy shirt cuttings at 6 cents and washables at 4.75 to 5 cents.

PAPER STOCK. —Prices of old papers are holding decidedly steady. There has been little actual change in market levels this week but the tendency in most instances is higher, and sellers are unmistakably stronger in their demands for the prices asked. Shavings are selling at from 4 cents a pound upwards f.o.b. New York for No. 1 hard white, with a majority of dealers wanting 4.25 cents for extra packing, and at about 3.10 cents as an average for No. 1 soft white shavings. Flat stock is gradually stiffening in price. Dealers mostly want at least 2.65 cents a pound New York for heavy No. 1 magazines, and it is noticeable that they refuse to take orders involving large lots at this price basis. Folded newspapers are selling at around 85 cents a hundred pounds f.ob. New York, and No. 1 mixed paper at 75 cents, and both these grades tend higher. Old kraft paper is firm at 2 cents a pound or more New York and is offered in sparse amounts.

OLD ROPE AND STRINGS. — Old rope prices have eased off a bit more. Sales of domestic manila rope in No. 1 condition to paper mills at 5.50 cents a pound f.o.b. New York have been reported, and it is stated that rope is freely available at a quarter of a cent per pound higher. Sisal strings are firm and in demand, with sellers asking 2.25 cents and more. Mixed strings, on the other hand, are quieter and are offered at about a cent per pound New York. Old bagging is little wanted by paper mills and the business going through is mostly at a price level of around 1.15 cents per

HANS LAGERLOEF, President and Treasurer
ORVAR HYLIN, Vice President
MAURICE LONDON, Secretary

TRADE HL MARK

Lagerloef Trading Co., Inc.

52 Vanderbilt Avenue
NEW YORK, N. Y.

Telephones
Murray Hill 4246 4247

WOOD PULP

SOLE AGENTS IN U. S. A., CANADA, MEXICO AND CUBA FOR

Finnish Cellulose Association
Helsingfors, Finland

AND

Finnish Wood Pulp Union
Helsingfors, Finland

pound at dealers' shipping points for No. 1 scrap burlap and 80 cents a hundred pounds for roofing bagging.

THE BIRTH OF AN INDUSTRY

Seventeen years ago, the idea of using paperboard for the manufacture of packing cases was conceived. The originator of the idea which has had such far-reaching effects, was, it is claimed, Mr. James J. Hinde, while President of the Hinde & Dauch Paper Company, of America.

To packers nowadays, the idea of despatching their commodities by rail and sea, in fibreboard packing cases, is no novel one. The advantages, from every point of view, of such containers over the old wooden variety are too well known to need recapitulating, but it is easy to understand with what incredulity the suggestion must have been received in those days. Pack goods which have to endure the roughest handling in transit—in *paper?* Ridiculous! It is well that the inventor of the innovation had faith in his idea, and was able to demonstrate the commercial practicability of the proposition.

Lamp chimneys, chosen, presumably, on account of their fragility, were selected as the first articles for shipment in boxboard containers. A long series of carefully conducted trials proved, beyond doubt, that the paperboard container, while not yet perfect, had more than justified its use. It remained to convince the public in general and packers of merchandise, in particular, that such was the case.

The principal medium of publicity employed was the trade fair, notably the World's Fairs at St. Louis and Jamestown, the New England food fair at Boston, and the annual Electric Shows held at Chicago. This publicity was supported by a vigorous general advertising campaign, the result of which was to make the popularity of the paperboard container increase to an amazing extent.

Not the least advantage of the use of fibreboard packing cases, although one rarely taken into consideration, is the consequent conservation of the world's timber supply, which was rapidly being exhausted owing to the ever increasing demands made upon it for supplying strong containers for the shipment of goods. Moreover, rapid as has been the development of the fibreboard packing case, there yet remain further fields of development. It has been estimated that 17 per cent. of America's timber production is still utilised for the manufacture of wooden packing cases. Scandinavia, too still reserves large quantities of its timber resources, which might be better employed, for the manufacture of packing cases which are more costly, and less efficient than the modern fibreboard container. The fibreboard industry is yet obviously in its early stages.—The Paper Container.

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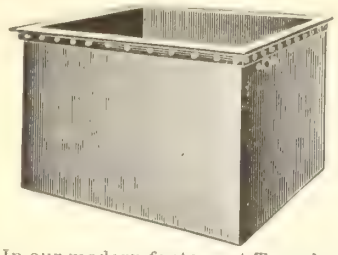
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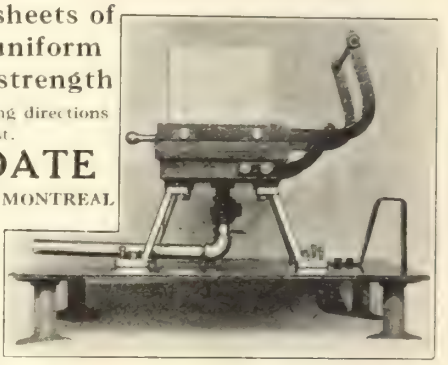
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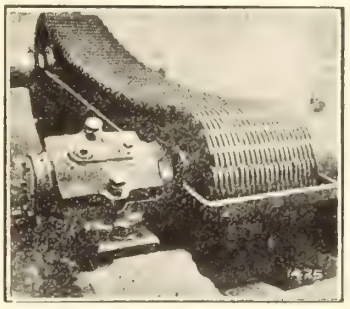
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MILL SUPPLIES. — Continued.

Engines: Gasoline:

Russel Brothers.

Electric Drives — Sectionalized Motor:

The Harland Engineering Co., of Canada, Ltd.

Engineers — Cruising:

Bradley, R. R.
Lacey, James D. & Co.
Sewall, J. W.

Engineers — Electrical:

Montabone, A. J. F.

Engineers — Soda Pulp Mill:

Herbert S. Kimball.

Engineers — Steam:

Burroughs, Chas. W.
Combe, F. A.
Montabone, A. J. F.
Taylor, Ltd., H. S.

Engineers — Ventilating:

Burroughs, Chas. W.
Management Engineering & Development Co.
Reed Co., Ltd., Geo. W.
Ross, J. O. Engineering Co.
Taylor, Ltd., H. S.

Engineers — Consulting:

Carey, Jas. L.
Combustion Engineering Corporation, Limited.
Ferguson, Hardy
Hamilton Gear & Machine Co.
Hardy, George.
Jenssen, G. D. and Co.
Kimball, Herbert S.
Management Engineering & Development Co.
Montabone, A. J. F.
Sewell, James W.
Stebbins Eng. & Mfg. Co.
Taylor, Ltd., H. S.
Wallace, Jos. H. & Co.
Williams, F. M.

Engineers — Chemical:

Herbert S. Kimball.

Engines — Crude Oil:

Pulp & Paper Mill Accessories, Ltd.

Exhausters:

Canadian Fairbanks-Morse Co., Ltd.
Can. Sirocco Co., Ltd.
Ross, J. O. Engineering Co.
Sherbrooke Machinery Co., Ltd.
Sturtevant, B. F. Co. of Canada, Ltd.

Experimental Machinery:

Victoria Foundry, Ltd.

Exporters:

Parsons Trading Co.
Reid, C. de Wolf.

Fans:

Can. Sirocco Co., Ltd.
Northern Electric Co., Ltd.
Perkins B. F. & Son, Inc.
B. F. Sturtevant Co. of Canada, Ltd.
Ross, J. O. Engineering Co.

Felt Rolls:

Can. Johns-Manville Co., Ltd.
Dominion Engineering Works, Ltd.
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.

Felts:

Ayers, Ltd.
Bates & Innes, Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Christie, John Co.
Johnson Wire Works, Ltd.
Kenwood Mills, Ltd.
Pulp & Paper Mill Accessories, Ltd.
Penmans, Ltd.
Porritts & Spencer, Ltd.
Tippett & Co., Ltd.
Warwick Woollen Mills, Ltd.
Whyte, Wm.

Fence — Wire:

Frost Steel & Wire Co., Ltd.

Fibre Vulcanized:

Canadian Fairbanks-Morse Co., Ltd.
Diamond State Fibre, Can., Ltd.
Hydraulic Machinery Co., Ltd.
Goold, Shapley & Muir Co., Ltd.
McKinnon Steel Co., Ltd.

Flag Poles (Steel):

Ontario Wind Engine & Pump Co., Ltd.

Filters — Water:

Darling Bros., Ltd.
Hydraulic Machinery Co., Ltd.
Norwood Engineering Co.

Fire Brick:

Alberene Stone Co.
Beveridge Supply Co., Ltd.
Elk Fire Brick Co.
Pulp & Paper Mill Accessories, Ltd.

Fire Clay:

Elk Fire Brick Co.

Fire Doors:

Reed Co., Ltd., Geo. W.

Fire Fighting Apparatus:

Waterous Engine Works Co., Ltd.

Fire Pails:

E. B. Eddy Co., Ltd.

Flights:

Hendrick Manufacturing Co.

Folding Machines:

Norwood Engineering Co.

Flooring:

Reed Co., Ltd., Geo. W.

Forced Steam Circulation System:

Crane Co., Ltd.

Foundations:

Foundation Company.

Foundry Ladles:

Steel Trough & Machine Co., Ltd.,

Fourdrinier Wires:

Christie George, Ltd.
Johnson Wire Works, Ltd.
Capital Wire Cloth & Mfg. Co., The
Niagara Wire Weaving Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.
Taylor, J. A.
Tippet & Co.
United Wire Works, Ltd.
Tyler Company, The W. S.
Whyte, Wm.

Friction Hoists:

Northern Foundry & Machine Co., Ltd.
Victoria Foundry, Ltd.
Waterous Engine Works, Co., Ltd.

Fuel Economisers:

Sturtevant, B. F. Co., of Canada, Ltd.

Fuses:

Canadian Fairbanks-Morse Co., Ltd.
Northern Electric Co., Ltd.

Furnace Linings:

Alberene Stone Co.
Beveridge Supply Co. Ltd.

Gasket — Felt, Paper, Etc.:

Canadian Fairbanks-Morse Co., Ltd.
Diamond State Fibre Co. of Can., Ltd.

Gaskets-Rubber:

Voorhees Rubber Mfg. Co. of Canada, Limited.

Gasoline Engines:

Canadian Fairbanks-Morse Co., Ltd.
Goold Shapley & Muir Co., Ltd.
Ontario Wind Engine & Pump Co., Ltd.

Gasoline Storage Tanks:

Can. Des Moines Steel Co.
Canadian Fairbanks-Morse Co., Ltd.

Gauges:

The Bristol Co.
Canadian Fairbanks-Morse Co., Ltd.
McAvity, T. & Son.

Gears:

Hamilton Gear & Machine Co.
Canadian Fairbanks-Morse Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Can. Link-Belt Co., Ltd.
Dominion Engineering Works, Ltd.
Goldie & McCulloch Co., Ltd.
Hamilton Co., Ltd., Wm.
Hydraulic Machinery Co., Ltd.
Northern Foundry & Machine Co., Ltd
Port Arthur Shipbuilding Co., Ltd.
Waterous Engine Works, Co., Ltd.

Generators:

Canadian Fairbanks-Morse Co., Ltd.
Northern Electric Co., Ltd.
The Harland Engineering Co. of Canada, Ltd.
Sturtevant, B. F. & Co. of Canada, Ltd.

Grates:

Port Arthur Shipbuilding Co., Ltd.

Grate Bars:

Beveridge Supply Co., Ltd.
Goldie & McCulloch Co., Ltd.
Victoria Foundry, Ltd.
Hamilton, William Co., Ltd.
Northern Foundry & Machine Co., Ltd
Port Arthur Shipbuilding Co., Ltd.
Waterous Engine Works, Co., Ltd.

Grating Area:

Hendrick Manufacturing Co.

Grindstones:

Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
International Pulp Stone Co.
Lombard & Co.
Miramichi Quarry Co.
Smallwood Stone Co.
Smallwood-Low Stone Co.

Grinders:

American Voith Contact Co., Inc.
Canadian Ingersoll-Rand Co., Ltd.
Eng. & Machine Works of Can. Ltd.
Northern Foundry & Machine Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Sherbrooke Machinery Co., Ltd.
Walsh Plate & Structural Works, Ltd.
Waterous Engine Works, Co., Ltd.

Guards — Machinery:

Hendrick Manufacturing Co.

Hangers:

Bond Engineering Works, Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Canadian Link-Belt Co., Ltd.
Goldie & McCulloch Co., Ltd.
Hydraulic Machinery Co., Ltd.
Northern Foundry & Machine Co.
Victoria Foundry, Ltd.
Waterous Engine Works Co., Ltd.

Heaters — Feed Water:

Sturtevant, B. F. Co., of Canada, Ltd.

Heating and Ventilating:

B. F. Sturtevant Co. of Canada, Ltd.
Ross, J. O. Engineering Co.

Hoists:

Canadian Fairbanks-Morse Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Can. Link-Belt Co., Ltd.
Gold Shapley & Muir Co., Ltd.
Hamilton, William Co., Ltd.
Northern Crane Works, Ltd.
Victoria Foundry, Ltd.

Hoods — Paper Machine:

Canadian Fairbanks-Morse Co., Ltd.
Taylor, Ltd., H. S.
Williams Apparatus.

Hose:

Voorhees Rubber Mfg. Co. of Canada, Limited.

Hydrants — Fire and Mill Yard:

Canadian Fairbanks-Morse Co., Ltd.
Norwood Engineering Co.

Hydraulic Presses:

Canadian Fairbanks-Morse Co., Ltd.
Hydraulic Machinery Co., Ltd.
Northern Foundry & Machine Co.
Port Arthur Shipbuilding Co., Ltd.
Waterous Engine Works Co., Ltd.

Instruments—Testing:

The Bristol Co.
Canadian Fairbanks-Morse Co., Ltd.
Northern Electric Co., Ltd.

Insulation:

Can. Johns-Manville Co., Ltd.
Northern Electric Co., Ltd.

Iron Castings:

See **Castings:**

Jordan Castings:

Hamilton, William Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.

Kilns—Lime

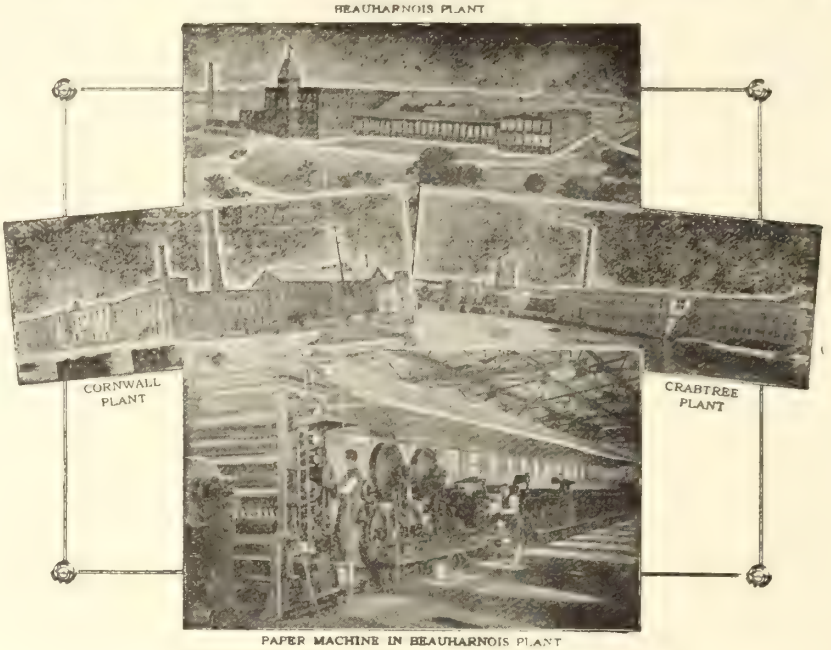
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Pulp and Paper Mill Accessories, Ltd.
Tippet & Co., Ltd.

Knife Grinders:
Canadian Fairbanks-Morse Co., Ltd.

Knives:
Beveridge Supply Co., Ltd.
J. W. Gordon & Sons, Inc.
Can. Des Moines Steel Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Hamblet Machine Co.
Peter Hay Knife Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.
Waterous Engine Works Co., Ltd.

Knives Paper Cutting:
Galt Knife Co., Ltd.
Hamblet Machine Co.
Peter Hay Knife Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.
Reid, C. De Wolf.

Kollergangs:
Bertrams, Ltd.
Boving Hydraulic & Engineering Co. Ltd.

Lamps — Electric:
Canadian Fairbanks-Morse Co., Ltd.
General Electric Co., Ltd.
Harland Engineering Co., Ltd.
Northern Electric Co., Ltd.

Laboratory Equipment:
Perkins, B. F. & Son., Inc.

Lath Machines:
Victoria Foundry, Ltd.

Lead Burning:
Barber, W. J. & Co.
St. Lawrence Welding Co.

Lead Goods:
The Canada Metal Co., Ltd.
McAvity, T. and Son.
Canada Wire & Iron Goods Co.

Locomotives:
Canadian Equipment Co., Ltd.
Jno. J. Gartshore.
Montreal Locomotive Works, Ltd.

Loggers:
Canadian Holt Co., Ltd.

Lubricants:
Canadian Fairbanks-Morse Co., Ltd.
Imperial Trading Co.

Lubricating Graphite:
Canadian Fairbanks-Morse Co., Ltd.
Dominion Paint Works, Ltd.

Lubricators:
Canadian Fairbanks-Morse Co., Ltd.
Imperial Trading Co.
McAvity, T. and Son.

Matches:
E. B. Eddy Co., Ltd.

Machine Tools:
Canadian Fairbanks-Morse Co., Ltd.
Victoria Foundry, Ltd.

Mechanical Draft:
The Underfeed-Stoker Co. of Can. Ltd.
Sturtevant, B. F. Co. of Canada, Ltd.

Mechanical Stokers:
The Under-Feed Stoker Co. of Canada, Ltd.

Meters, Steam:
Canadian Fairbanks-Morse Co., Ltd.
The Bristol Co.
Peacock Bros., Ltd.

Monel Metal:
Hendrick Manufacturing Co.

Motors:
Canadian Fairbanks-Morse Co., Ltd.
Canadian General Electric Co., Ltd.
Harland Engineering Co., Ltd.
Northern Electric Co., Ltd.
Sturtevant, B. F. Co. of Canada, Ltd.

Mill Brokers:
Can. Woodlands & Pulpwood Agency

Motor Drives — Individual, Sectional:
Canadian Fairbanks-Morse Co., Ltd.
Canadian General Electric Co., Ltd.
Canadian Link-Belt Co., Ltd.
Can. Westinghouse Co., Ltd.
Harland Engineering Co., Ltd.

Oil:
The Barrett Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.

Oil Engines:
Canadian Ingersoll-Rand Co., Ltd.

Oxy-Acetylene Welding and Supplies:
Canadian Fairbanks-Morse Co., Ltd.
Walsh Plate & Structural Works, Ltd.

Packing:
Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.

Packings-Sheet and Hydraulic:
Canadian Fairbanks-Morse Co., Ltd.
Voorhees Rubber Mfg. Co. of Canada, Limited.

Paints:
Barrett Co., Ltd.
Beveridge Supply Co., Ltd.
Dominion Paint Works, Ltd.
McArthur, Irwin, Ltd.

Perforated Metal:
Canada Wire & Iron Goods Co.
Hendrick Manufacturing Co.

Pinions:
Canadian Link-Belt Co., Ltd.
Hamilton Gear & Machine Co.
Port Arthur Shipbuilding Co., Ltd.

PAPER AND PULP

Bonds — Bristols, Ledgers, Writing:
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E. B. Eddy Co., Ltd.
Provincial Paper Mills Co., Ltd.
Rolland Paper Co., Ltd.

Book and Coated:
Beveridge Supply Co., Ltd.
Provincial Paper Mills Co., Ltd.
Rolland Paper Co., Ltd.

Box Board:
Acer, J. H. A. & Co., Ltd.
Beveridge Supply Co., Ltd.
Brompton Pulp & Paper Co.
Canada Paper Board Co.
Eddy, E. B. & Co.
Price Bros. & Co., Ltd.
Reid, C. de Wolf.

Genuine Vegetable Parchment:
Beveridge Supply Co., Ltd.
Can. Vegetable Parchment Co., Ltd.
Garden City Paper Mills Co., Ltd.
Victoria Paper & Twine Co., Ltd.

Greaseproof Paper:
Beveridge Supply Co., Ltd.
Can. Vegetable Parchment Co., Ltd.
Diamond State Fibre Co., of Can., Ltd.
Garden City Paper Mills Co., Ltd.
Victoria Paper and Twine Co., Ltd.

Groundwood Pulp:
Abitibi Power & Paper Co., Ltd.
Acer, J. H. A. & Co., Ltd.
American Woodpulp Corp.
Brompton Pulp & Paper Co., Ltd.
Donnacona Paper Co.
Henry Atkinson.
John C. Christie Co.
M. Gottesman & Co., Ltd.
Interstate Pulp & Paper Co., Inc.
Laurentide Co., Ltd.
Lagerloef Trading Co., Inc.
Price Bros. & Co., Ltd.
Relph, Darwen & Pearce
St. Maurice Paper Co.
Spanish River Pulp & Paper Mills.

Kraft Paper:
Acer J. H. & Co., Ltd.
Bathurst Lumber Co., Ltd.
Beveridge Supply Co., Ltd.
Brompton Pulp & Paper Co., Ltd.
Dryden Pulp and Paper Co., Ltd.
Gottesman & Co., Inc.
Price & Pearce, Ltd.
Victoria Paper & Twine Co., Ltd.
Wayagamack Pulp & Paper Co., Ltd.

Lumber Pulp & Paper Co.
Brompton Pulp & Paper Co.
Price Bros & Co., Ltd.

Mill Wrappers:
Acer, J. H. & Co., Ltd.
Brompton Pulp & Paper Co.
Eddy, E. B. & Co., Ltd.
Price Bros. & Co., Ltd.

Netting Locomotive Stock:
Hendrick Manufacturing Co.

Newsprint:
Abitibi Power & Paper Co., Ltd.
Belgo Paper Co.
Beveridge Supply Co., Ltd.
Brompton Pulp & Paper Co., Ltd.
Dryden Pulp & Paper Co., Ltd.
Eddy E. B. & Co., Ltd.
Ford, J. & Co.
M. Gottesman & Co.
Laurentide Co., Ltd.
Mead, Patton & Co., Inc.
Price Bros & Co., Ltd.
Spanish River Pulp & Paper Mills.
St. Maurice Paper Co.

Roofing:
The Barrett Co., Ltd.
Beveridge Supply Co., Ltd.
Ford, J. & Co.
Interstate Pulp & Paper Mills Co., Inc.
Spanish River Pulp & Paper Mills

Parchment:
Beveridge Supply Co., Ltd.
Can. Vegetable Parchment Co., Ltd.
Garden City Paper Mills Co., Ltd.
Victoria Paper & Twine Co., Ltd.

Specialities:
Beveridge Supply Co., Ltd.
Diamond States Fibre Co., of Can., Ltd.
Can. Nashua Paper Co., Ltd.
Can. Vegetable Parchment Co., Ltd.
Garden City Paper Mills Co., Ltd.
Price Bros & Co., Ltd.
Howard Smith Paper Mills.
Victoria Paper & Twine Co., Ltd.

Soda Pulp:
M. Gottesman & Co., Inc.

Soda Recovery Systems:
Swenson Evaporator Co.

Sulphate Pulp (Kraft):
American Woodpulp Corp.
Bathurst Lumber Co., Ltd.
Brompton Pulp & Paper Co., Ltd.
Gottesman, M. & Co., Inc.
Dryden Pulp & Paper Co., Ltd.
Lagerloef Trading Co., Inc.
Wayagamack Pulp and Paper Co., Ltd.

Sulphate Mill Equipment:
Swenson Evaporator Co.

Sulphite Pulp:
Abitibi Power & Paper Co., Ltd.
Acer, J. A. & Co., Ltd.
American Woodpulp Corp.
Donnacona Paper Co.
M. Gottesman & Co., Inc.
Lagerloef Trading Co., Inc.
Laurentide Co., Ltd.
Mattagmi Pulp & Paper Co., Ltd.
Price Bros & Co., Ltd.
Riordon Sales Co., Ltd.
Spanish River Pulp & Paper Mills, Ltd.
St. Maurice Paper Co.
Howard Smith Paper Mills

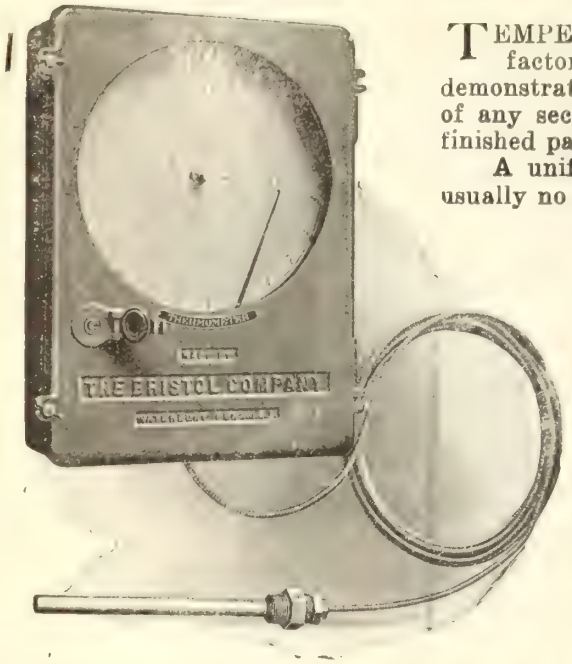
Tissue and Toilet:
Beveridge Supply Co., Ltd.
Can. Vegetable Parchment Co., Ltd.
Garden City Paper Mills Co., Ltd.
Interlake Tissue Mills Co., Ltd.
Victoria Paper & Twine Co., Ltd.

Wrapping:
Beveridge Supply Co., Ltd.
Brompton Pulp & Paper Co., Ltd.
Can. Vegetable Parchment Co., Ltd.
Dryden Pulp & Paper Co., Ltd.
Eddy E. B. & Co., Ltd.
Garden City Paper Mills Co., Ltd.
Interlake Tissue Mills Co., Ltd.
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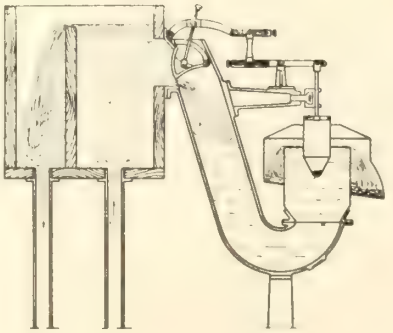
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Paper Cores:
Elixman Paper Core Co.

Paper Cutting Machines:
Cameron Machine Co.
Walmesley, Charles & Co., Ltd.

Paper and Pulp Machinery:
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Beveridge Supply Co., Ltd.
Bertrams, Ltd.
Black-Clawson Co.
Boving Hydraulic & Eng. Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Hamilton Co., Ltd., Wm.
Hydraulic Machinery Co., Ltd.
Johnson Wire Works, Ltd.
Norwood Engineering Co.
Mackinnon Steel Co., Ltd.
McAvity & Sons, Ltd., T.
Mills Works & Machinery, Ltd.
Morrison, J. L. Co.
Port Arthur Shipbuilding Co., Ltd.
Pulp and Paper Mill Accessories, Ltd.
Pusey & Jones Co.
Sherbrooke Machinery Co., Ltd.
Stebbins Eng. & Mfg. Co.
Ticonderoga Machine Works
Walsh Plate & Structural Works, Ltd.
Walmsley, Chas. & Co.
Waterous Engine Works Co., Ltd.
Westbye, P. P.

Paper Stock:
Pulp & Paper Mill Accessories, Ltd.

Paper Testers:
Canadian Fairbanks-Morse Co., Ltd.
Waterous Engine Works Co., Ltd.

Penstocks:
Dominion Engineering Works, Ltd.
Hamilton, William Co., Ltd.
Hendrick Manufacturing Co.
MacKinnon Steel Co., Ltd.
Walsh Plate & Structural Works, Ltd.
White, W. H.

Penstocks, Wood Stave:
Canadian Pipe Company, Ltd.
Pacific Coast Pipe Co., Ltd.
White, W. H.

Pillow Blocks:
Canadian Fairbanks-Morse Co., Ltd.
Canadian Link-Belt Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Victoria Foundry Co., Ltd.
Waterous Engine Works Co., Ltd.

Pipe — Riveted:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.

Pipe — Wood Stave:
Canadian Pipe Company, Ltd.

Pipes — Brass & Copper:
Tallman Brass & Metal Co., Ltd.

Piping — High Pressure:
Canadian Fairbanks-Morse Co., Ltd.
Crane, Ltd.
McAvity & Sons, Ltd., T.
Northern Foundry & Machine Co.

Piping Hydraulic:
Canadian Fairbanks-Morse Co., Ltd.
Dodge Manufacturing Co.
Hydraulic Machinery Co., Ltd.

Plate and Tank Works:
Can. Des Moines Steel Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Dominion Engineering Works, Ltd.
Goldie & McCulloch Co., Ltd.
Hamilton, William Co., Ltd.
Hendrick Manufacturing Co.
Horton Steel Works, Ltd.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Walsh Plate & Structural Works, Ltd
Waterous Engine Works Co., Ltd.

Plates — Calenders:
Norwood Engineering Co.

Pneumatic Collecting and Conveying Systems:
Sturtevant, B. F. Co. of Canada, Ltd.

Pneumatic Thickners:
Sherbrooke Machinery Co., Ltd.
Waterous Engine Works Co., Ltd.

Pneumatic Tools:
Canadian Ingersoll-Rand Co., Ltd.

Power Factor Correcting Devices:
Griswold & Co.

Power Condensers:
Griswold & Co.

Presses:
Boving Hydraulic & Eng. Co., Ltd.
Canadian Ingersoll-Rand Co. Ltd.
Hydraulic Machinery Co., Ltd.
Northern Foundry & Machine Co.
Port Arthur Shipbuilding Co., Ltd.

Press Rolls:
Bertrams, Ltd.
Dominion Engineering Works, Ltd.
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Sherbrooke Machinery C., Ltd.
Waterous Engine Works Co., Ltd.

Pressure Tanks:
Steel Trough & Machine Co., Ltd.

Pulleys:
Boving Hydraulic & Eng. Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Canadian Link-Belt Co., Ltd.
Dominion Engineering Works, Ltd.
Hamilton, William Co., Ltd.
Northern Foundry & Machine Co., Ltd
Port Arthur Shipbuilding Co., Ltd.
Victoria Foundry Co., Ltd.
Waterous Engine Works, Co. ,Ltd.

Pulp Slashers:
Hamilton, William Co., Ltd.

Pulp Stones:
American Stone Co., Inc.
Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
International Pulp Stone Co.
Lombard & Co.
Miramichi Quarry Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.
Smallwood Stone Co.
Smallwood-Low Stone Co.

Pulp Stone Burrs:
Can. Fairbanks-Morse Co., Ltd.

Pulp Thickeners:
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.
Sherbrooke Machinery Co., Ltd.

Pulp Wood:
Crittsinger, Burt C.

Pumps:
Bertrams, Ltd.
Boving Hydraulic & Eng. Co., Ltd.
Can. Fairbanks-Morse Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Dominion Engineering Works, Ltd.
Goldie & McCulloch Co., Ltd.
Goold Shapley & Muir Co., Ltd.
Hydraulic Machinery Co., Ltd.
Hamilton, Wm. Co., Ltd.
Harland Engineering Co., Ltd.
Lawrence Machine Co.
McAvity T. and Son.
Northern Foundry & Machine Co.
Ontario Wind Engine and Pump Co., Ltd.
Peacock Bros., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Sherbrooke Machinery Co., Ltd.
Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co., Ltd.
Weir, Ltd., G. & J.

Pumps — Stock:
Canadian Fairbanks-Morse Co. Ltd.

Pumps — Boiler Feed:
Canadian Allis-Chalmers, Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Goldie & McCulloch Co., Ltd.
Harland Engineering Co., Ltd.
McAvity, T. and Sons, Ltd.
Northern Foundry & Machine Co., Ltd

Pyrometers:
The Bristol Co.

Rag Cutter Knives:
Beveridge Supply Co., Ltd.
J. W. Bolton & Sons, Inc.
Pulp & Paper Mill Accessories, Ltd.

Rails: — Re-laying:
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Dartshore, J. J.

Recording Ammeters:
The Bristol Co.

Recording Instruments:
Canadian Fairbanks-Morse Co., Ltd.
The Bristol Co.
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Recording Wattmeters:
The Bristol Co.

Refiners:
American Voith Contact Co., Inc.
Bertrams, Ltd.
Boving Hydraulic & Eng. Co., Ltd.
Can. Fairbanks-Morse Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Sherbrooke Machinery Co., Ltd.
Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co., Ltd.

Regulators — Steam:
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Pickles, W. F.
The Under-Feed Stoker Co. of Canada Limited.

Regulators:
Mills Works & Machinery, Ltd.
The Under-Feed Stoker Co. of Canada Limited.

Reverse Gears:
Canadian Fairbanks-Morse Co., Ltd.
Russel Brothers.

Rock Drills:
Canadian Ingersoll-Rand Co., Ltd.

Rods—Copper, Brass and Bronze:
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Tallman Brass & Metal, Ltd.

Rods — Welding:
Tallman Brass & Metal, Ltd.

Roll-Winding Machines:
Cameron Machine Co.
Port Arthur Shipbuilding Co., Ltd.

Roofings — Plastic and Liquid:
Barrett Co., Ltd.
Beveridge Supply Co., Ltd.
Can. Johns-Manville Co., Ltd.
Reed & Co., Ltd., Geo. W.

Rope:
Jones & Glassco.
Goldie & McCulloch Co., Ltd.

Rosin Size:
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Vera Chemical Co. of Canada, Ltd.
Wilson Paterson Co.

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Pulp and Paper Mill Accessories, Ltd.

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Stebbins Eng. & Mfg. Co.

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Goldie & McCulloch Co., Ltd.

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Salt Cakes:
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The Kalbfleisch Corporation.

Save-Alls:
Canadian Ingersoll-Rand Co., Ltd.
MacKinnon Steel Co., Ltd.
Pulp and Paper Mill Accessories, Ltd.
Port Arthur Shipbuilding Co., Ltd.
Sherbrooke Machinery Co., Ltd.
Waterous Engine Works, Co., Ltd.

Slitters and Rewinders:
Cameron Machine Co.
Port Arthur Shipbuilding Co., Ltd.

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Can. Fairbanks-Morse Co., Ltd.
Goold Shapley & Muir Co., Ltd.
Ontario Wind Engine and Pump Co. Ltd.
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Port Arthur Shipbuilding Co., Ltd.
Pulp and Paper Mill Accessories, Ltd.
Sherbrooke Machinery Co., Ltd.
Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co., Ltd.
Westbye, P. P.

Separators — Oil:
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Goldie & McCulloch Co., Ltd.

Separators — Steam:
Canadian Fairbanks-Morse Co., Ltd.
Crane Co., Ltd.
Peacock Bros., Ltd.

Shafting:
Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works Ltd.
Northern Foundry & Machine Co., Ltd.
Waterous Engine Works, Co., Ltd.

Sheet Lead:
The Canada Metal Co., Ltd.

Sheets—Copper, Brass and Bronze:
McAvity & Sons, Ltd., T.
Tallman Brass & Metal, Ltd.

Sheet Samplers:
John Date.

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Canadian Ingersoll-Rand Co., Ltd.

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Hydraulic Machinery Co., Ltd.
Fort Arthur Shipbuilding Co., Ltd.

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Size:
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Waterous Engine Works, Co., Ltd.

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Cameron Machine Co.
Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Langston Co., Samuel M.
Morrison, The J. L. Co.
Ticonderoga Machine Works.
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Dominion Engineering Works, Ltd.
Hamilton Co., Wm.
Hendrick Manufacturing Co.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
The Steel Trough & Machine Co., Ltd.
Waterous Engine Works, Co., Ltd.

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Soda Ash:
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Soot Cleaners:
Beveridge Supply Co., Ltd.

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McAvity T. & Son.
Tallman Brass & Metal, Ltd.

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Can. Link-Belt Co., Ltd.
Waterous Engine Works, Co., Ltd.

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Bemis Manufacturing Associates.

Splitters:
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Canadian Fairbanks-Morse Co., Ltd.
Waterous Engine Works Co., Ltd.

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Can. Des. Moines Steel Co., Ltd.
Hendrick Manufacturing Co.

Sprocket:
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Can. Link-Belt Co., Ltd.
Hamilton Gear & Machine Co.
Hamilton, William Co., Ltd.
Northern Foundry & Machine Co.
Waterous Engine Works Co., Ltd.

Stacks:
Dominion Engineering Works, Ltd.
Hamilton, William Co., Ltd.
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.

Stackers:
Canadian Link-Belt Co., Ltd.

Tanks — Iron and Steel:
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Walsh Plate &Structural Works, Ltd.
Waterous Engine Works, Co., Ltd.

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Canadian Fairbanks-Morse Co., Ltd.
McAvity, T. and Son.
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Waterous Engine Works, Co., Ltd.

Steam Engines:
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Sturtevant Co. of Canada, Ltd., B. F.
Walmsley, Charles & Co., Ltd.

Steam Regulator:
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Crane Co., Ltd.
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Steel Shop Boxes:
Steel Trough & Machine Co., Ltd.

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Goldie & McCulloch Co., Ltd.
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Hamilton Co., Wm.
Northern Foundry & Machine Co., Ltd

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Walsh Plate & Structural Works, Ltd.

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Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co., Ltd.

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Hydraulic Machinery Co., Ltd.

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MacKinnon Steel Co., Ltd.
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Waterous Engine Works, Co., Ltd.

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Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.

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Port Arthur Shipbuilding Co., Ltd.
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Ontario Wind Engine and Pump Co. Ltd.
Port Arthur Shipbuilding Co., Ltd.

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Goold Shapley & Muir Co., Ltd.
Pacific Coast Pipe Co.
Ontario Wind Engine and Pump Co. Ltd.
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White, W. H.

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Telephone—Apparatus:
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The Bristol Co.

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Walsh Plate & Structural Works, Ltd.

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Waterous Engine Works, Co., Ltd.

Traps—Steam:
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White, W. H.

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Port Arthur Shipbuilding Co., Ltd.

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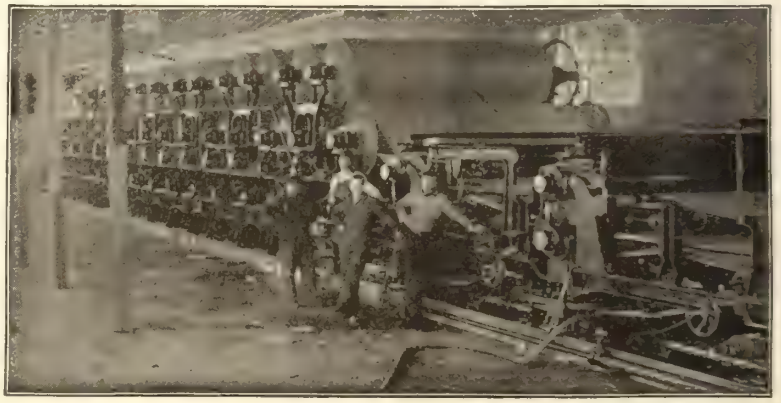
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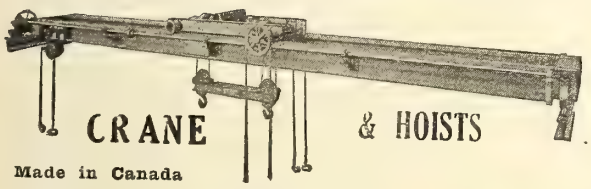
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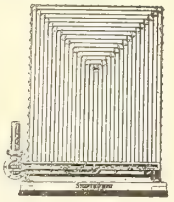
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Unpaged advertisements appear in every other issue.

A

Alberene Stone Co., Ltd. .. ..
Abitibi Power & Paper Co. Ltd. .. 84
Acer, J. A. H. & Co., Ltd. 74
American Voith Contact Co., Inc. ..
American Stone Co. .. ..
American Woodpulp Corporation .. 24
Ayers, Limited 11

B

Babcock & Wilcox .. ..
Barrett & Co., Ltd., The .. ..
Barber, W. J. & Co., Ltd. .. ..
Bathurst Company, Ltd. 82
Bates & Innes, Ltd. 25
Bemis Manufacturing Association ..
Bertrams, Limited .. ..
Belgo Paper Co., Ltd., The 82
Beveridge Supply Co., Ltd. .. ..
Black-Clawson Co., The 86
Bolton, John W. & Sons, Inc. 26
Boving, Hydraulic & Engineering ..
Company, Limited .. ..
Bristol Co., The 80
Brompton Pulp & Paper Co., Ltd. .. 82
Burgess, E. T. .. ..

C

Canada Foundries & Forgings, Ltd. 72
Canada Metal Co., Ltd. 71
Cameron Machine Co. 87
Canadian Combustion Co., Ltd. ..
Canadian Barker Co. .. ..
Canadian Des Moines Steel Co., Ltd. 84
Canadian Elixman Co., Ltd. .. ..
Canadian Equipment Co., Ltd. .. 30
Canadian Fairbanks-Morse Co., Ltd. 32
Canadian Ingersoll-Rand Co., Ltd. ..
Canadian Johns-Manville Co., Ltd. .
Canadian Mead-Morrison Co., Ltd. ..
Canadian Link-Belt Co., Ltd. 8
Canadian Milk Products, Ltd. 16
Canadian Nashua Paper Co., Ltd. ..
Canadian Paperboard Co., Ltd. 24
Canadian Pipe Co., Ltd. .. ..
Canadian Robert Dollar Co., Ltd. .. 2
Canadian Sirocco Co., Ltd. 71
Canadian SKF Co., Ltd. 1
Canadian Vegetable Parchment Co.,
Limited .. ..
Canadian Vickers, Ltd. 10
Canadian Westinghouse Co., Ltd. ..
Capital Wire Cloth & Mfg. Co., Ltd. 26
Carey, Jas. L. 22
Christie, George, Ltd. 80
City of Hull .. ..
Clayton, Neil & Jones, Ltd. 12
Combustion Engineering Corporation
Limited 5
Crane, Ltd. 4
Crittsinger, Burt Co., Inc. 28
Cleveland Stone Co., The .. ..

D

Date, John 72
Dept. of Lands, Forests & Mines
Ontario 17
Dodge Mfg. Co. of Canada, Ltd. ..
Dominion Belting Co. .. ..
Dominion Engineering Works, Ltd. 19
Dominion Oxygen Co., Ltd. .. ..
Donnacona Paper Co., Ltd., The .. 24
Don Valley Paper Co., Ltd. The 24
Dryden Paper Co., Ltd. 24
Dunlop Tire & Rubber .. ..
Dunham, C. A. Co. .. ..

E

Elixman Paper Core Co., Inc. .. .. ..
Elk Fire Brick Co. of Canada, Ltd.
English China Clays, Ltd. .. ..
Engineering & Machine Works of
Canada, Ltd. .. ..

F

Ferguson, H. S. 22
Ford, J. & Co. .. ..
Foundation Co., Ltd. 22

G

Galt Knife Co., Ltd. .. ..
Garden City Paper Mills, Ltd. .. ..
Geigy Co., Inc. 27
Goldie & McCulloch Co., Ltd. .. ..
Goold, Shapley & Muir Co., Ltd. .. 72
Gottesman, M. & Co 29
Graselli Chemical Co., Ltd., The ..
Graton & Knight Mfg. Co., Ltd. ..
Griswold & Co. .. ..
Gutta Percha & Rubber, Ltd. 6

H

Hamblet Machine Co. 25
Hamilton, Wm. Co. of Canada, Ltd. 89
Hamilton Gear & Machine Co. 18
Hans Renold of Canada, Ltd. 74
Hardy, George F. 22
Harland Engineering Co. of Canada,
Limited .. ..
Hay Knife Co., Ltd., Peter .. ..
Hendrick Mfg. Co. .. ..
Hercules Powder Co. .. ..
Holliday, L. B. & Co., Ltd. .. ..
Huestis, A. M. .. ..
Hydraulic Machinery Co., Ltd. 3

I

Industrial Engineering Co., Ltd. .. 72
International Business Machines Co.,
Limited. 23
International Pulp Stone Co., The 27
Interlake Tissue Mills Co., Ltd. ..

J

Jenkins Bros., Ltd. .. ..
Jenssen Co., G. D. 23
Johnson Wire Works, Ltd., The .. 30
Jones & Glassco, Regd. .. ..

K

Kalbfleisch Corporation, The .. .. ..
Kander Paper Stock Co., Ltd., The 24
Kenwood Mills, Ltd. 13
Kimball, Herbert S. 23
Kingsbury Machine Works 18
Klipstein, A. & Co., Ltd. .. ..

L

Lacey, James D. & Co. 18
Lagerloef Trading Co. 69
Langston, Samuel M. Co. 27
Laurentide Co., Ltd. 84
Lawrence Machine Co. .. ..
Lombard & Co. Inc. 27

M

Management Engineering & Devel-
opment Co., The 23
Mead, Patton & Co., Ltd. 23
McArthur, Irwin, Ltd. 20
McAvity, T. & Co., Ltd. .. ..
McKinnon Steel Co., Ltd. 22
Mills Works & Machinery, Ltd. .. 80
Miramichi Quarry Co., Ltd., The .. 28
Montabone, J. A. F. .. ..
Montreal Locomotive Works, Ltd. .
Morrison, J. L. Co., The 78

N

National Paper Stock Co., The 24
Niagara Wire Weaving Co., Ltd. The..74
Northern Crane Works, Ltd. 87
Northern Electric Co., Ltd. 4
Northern Foundry & Machine Co. .. 12
Norwood Engineering Co. of Canada,
Limited 26

O

Oliver Contitnuous Filter Co. .. ..
Ontario Forestry Branch .. ..
Ontario Wind Engine & Pump Co.,
Limited .. ..

P

Pacific Coast Pipe Co., Ltd. 30
Peacock Brothers, Ltd. 21
Penmans Limited 20
Port Arthur Shipbuilding Co., Ltd. 29
Porritts & Spencer Co., Ltd. 74
Price Bros. & Co., Ltd. .. ..
Price & Pierce, Ltd. 82
Provincial Paper Mills, Ltd. 76
Pusey & Jones Co., The .. ..
Pulp & Paper Mill Accessories, Ltd. 85
Pulp & Paper Trading Co. 28

Q

Quarries, C. & M. Co. 72

R

Reed, Geo. W. & Co., Ltd. .. ..
Relph, Darwen & Pearce 86
Rolland Paper Co., Ltd. 86
Ross Engineering of Canada Ltd. .. 27
Russell Brothers 26

S

Sadler & Haworth 2
Sewall, Jas. W. 22
Sherbrooke Machinery Co. 9
Smallwood Stone Co., The 24
Smallwood Low Stone Co., Ltd. .. 27
Smith Howard Paper Mills, Ltd. .. 78
Spanish River Pulp & Paper Mills,
Limited 86
Steel Trough & Machine Co., Ltd. . 72
Stinson-Reeb Builders' Supply Co.,
Limited 23
Stebbins Engineering & Mfg. Co. .. 22
St. Maurice Paper Co., Ltd. .. ..
Sturtevant Co., of Canada, Ltd. 87
Swenson Evaporator Co. 18

T

Tallman, Brass & Metal, Ltd. .. .. ..
Taylor, J. A. 80
Taylor, H. S., Ltd. 23
Texas Gulf Sulphur Co. 32
Ticonderoga Machine Works .. ..
Tippett & Co., Ltd. 25
Tyler, W. S. & Co., The 27
Trimbey Machine Works .. ..

U

Underfeed Stoker Co. of Canada, Ltd.
Union Screen Plate Co. of Canada,
Limited 87
Union Sulphur Co., The 30
United Wire Works, Ltd. 25

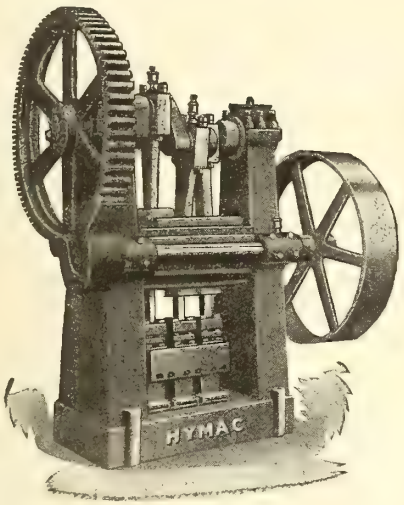
V

Vera Chemical Co. of Canada 72
Voorhees Rubber Mfg. Co. of Canada,
Limited 19

W

Wallace, John H. W. & Co., Ltd. .. 22
Wardlaw, T. D. & Son 27
Walmsley, Charles & Co. Ltd. 14-15
Warren, Kenneth L. 22
Warwick Woollen Mills, Ltd. 28
Watford Engineering Works, Ltd. .
Waterous Engine Works 90
Wayagamack Pulp and Paper Co.,
Limited .. ..
Weir, G. & J. (Canada), Ltd. 21
Westbye, P. P. 16
White, W. H. 22
Whyte, William 23
Wilson Patterson Co. 72
Wood Pulp Trading Co., Ltd. 70

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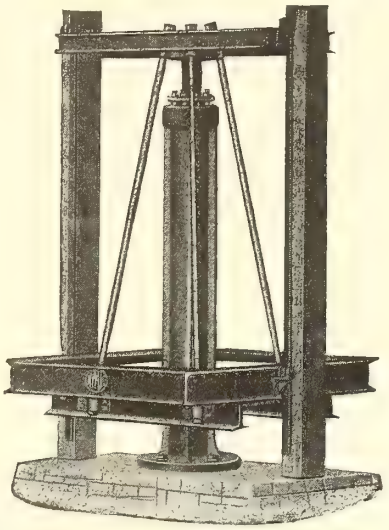
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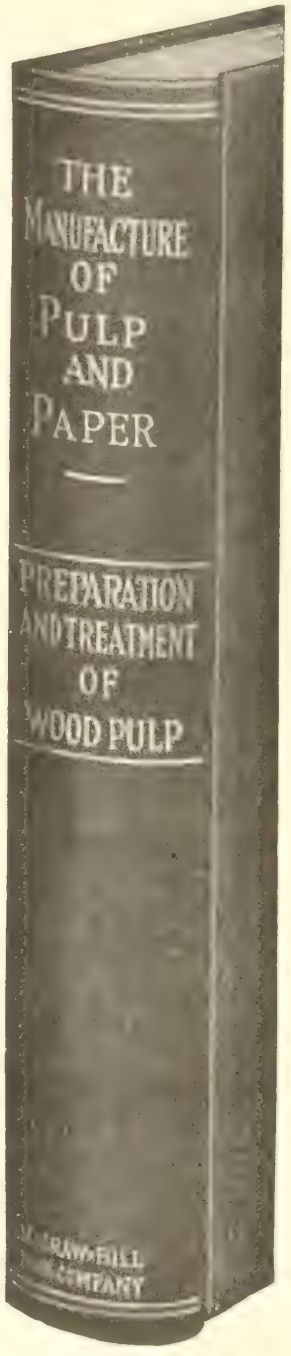
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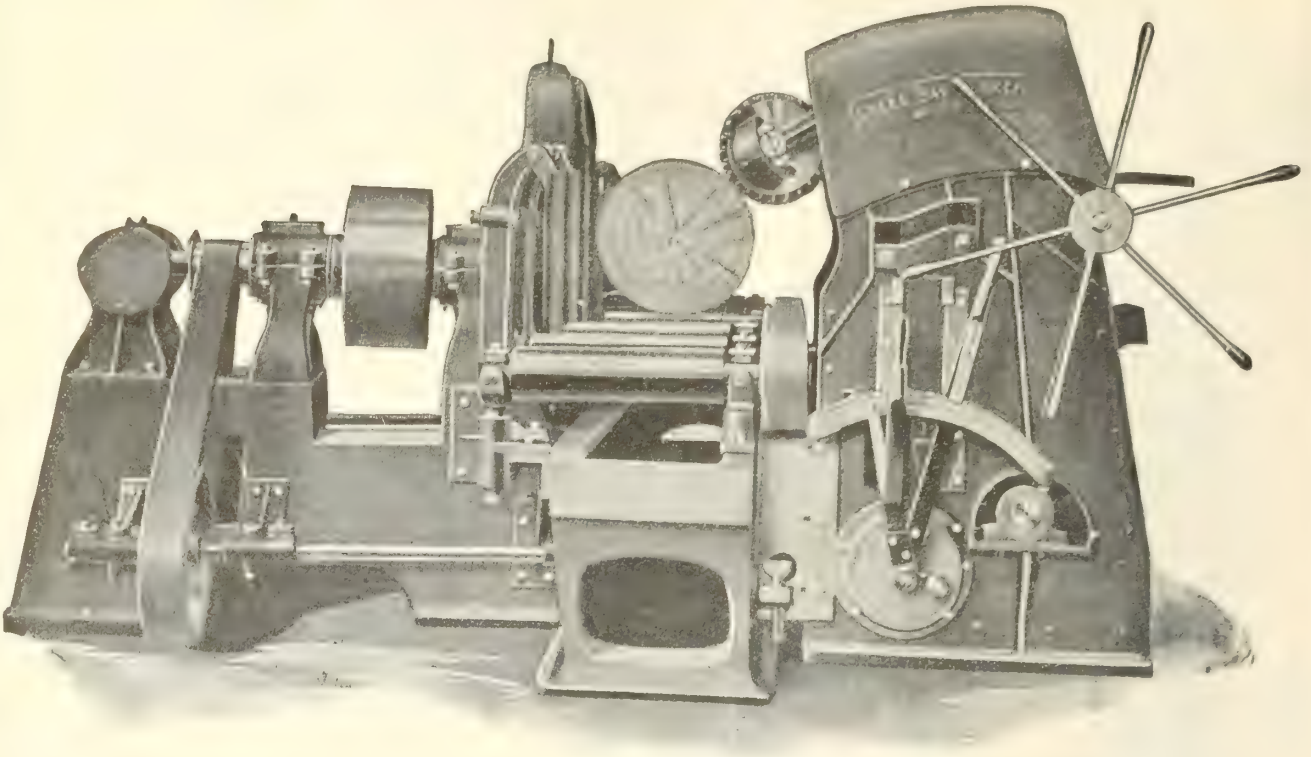
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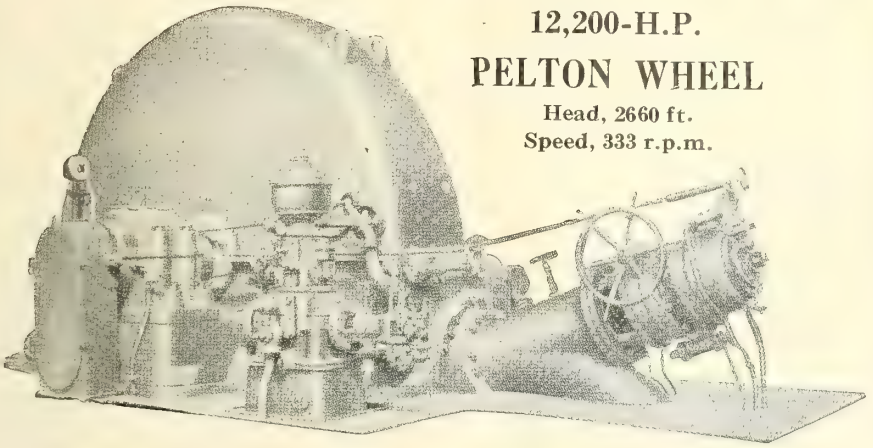
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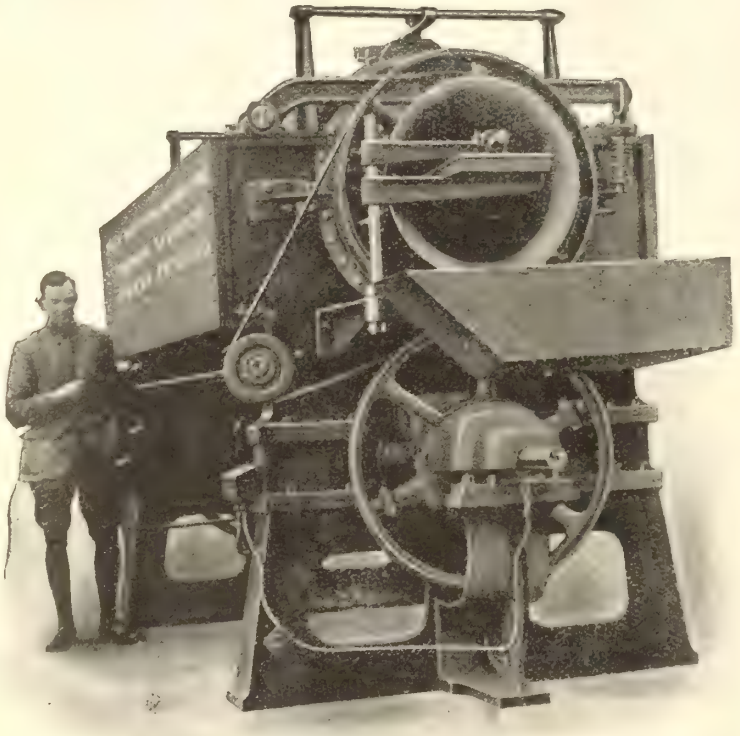
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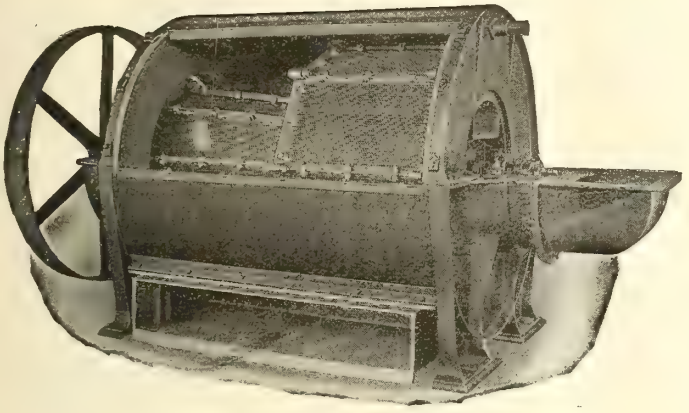
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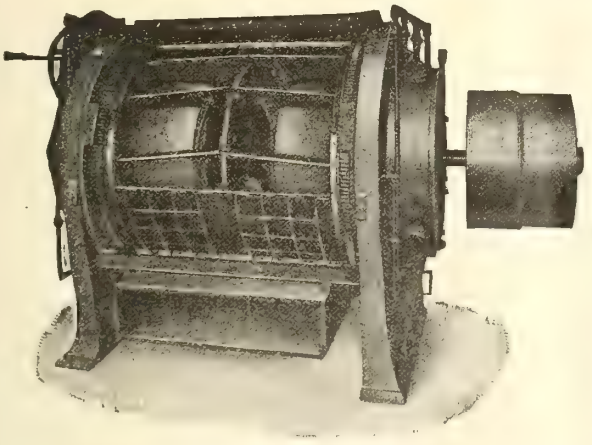


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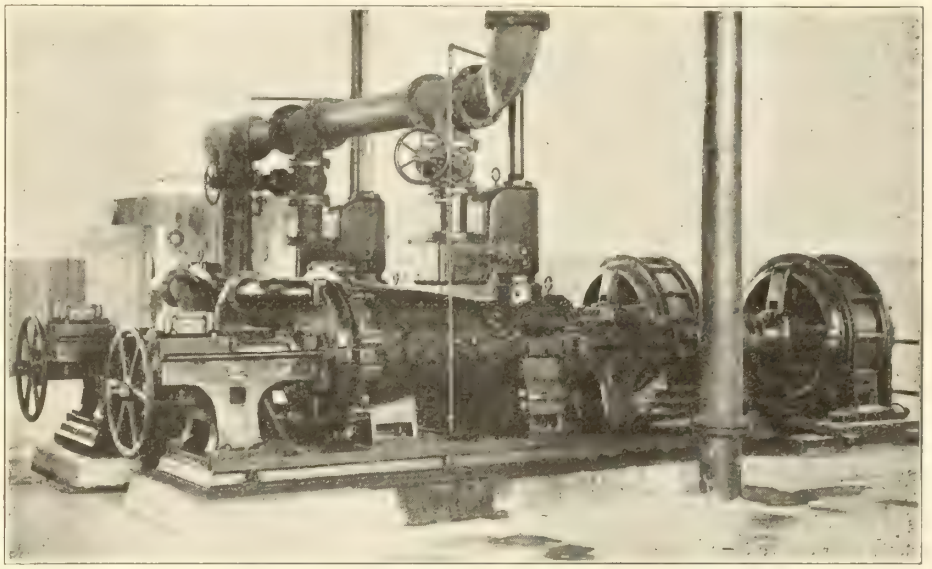
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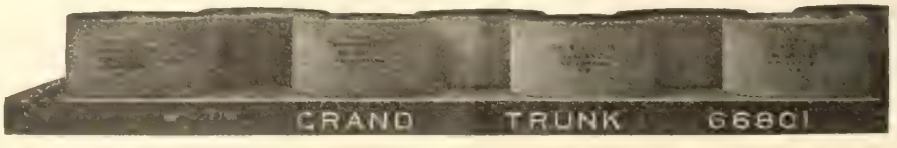
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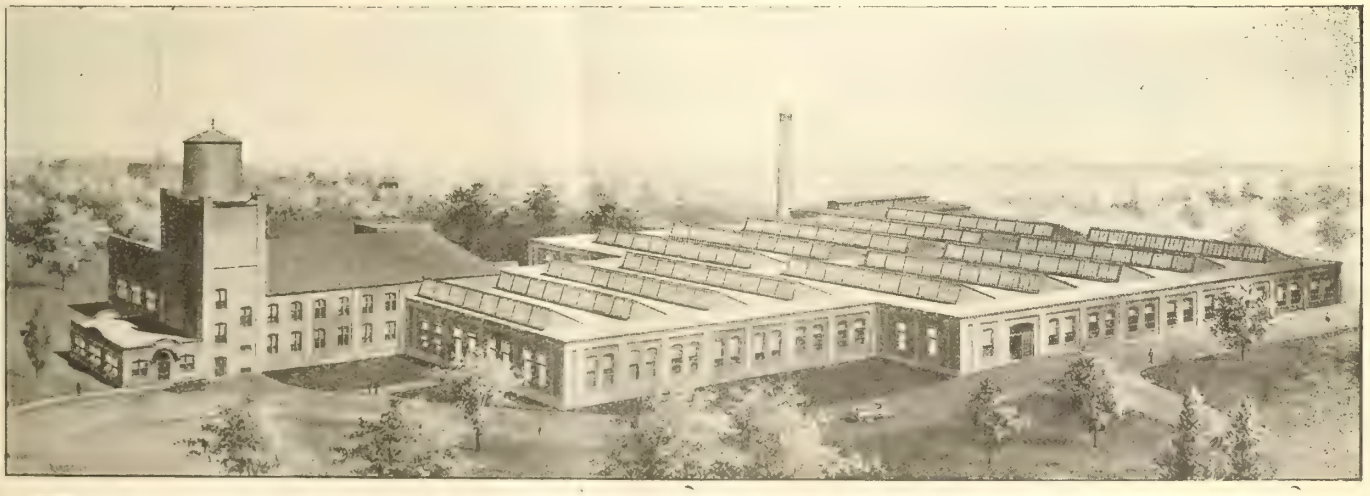
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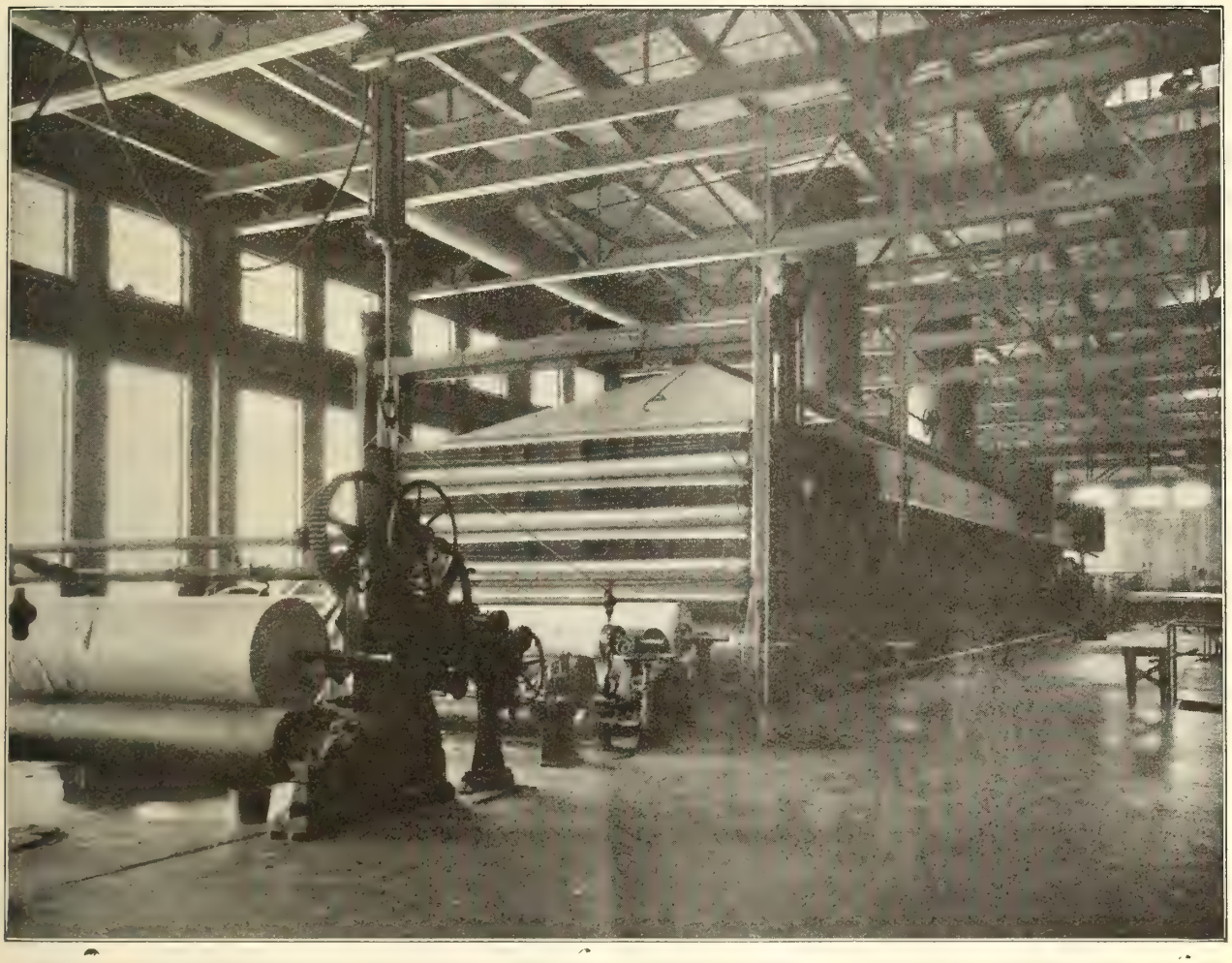
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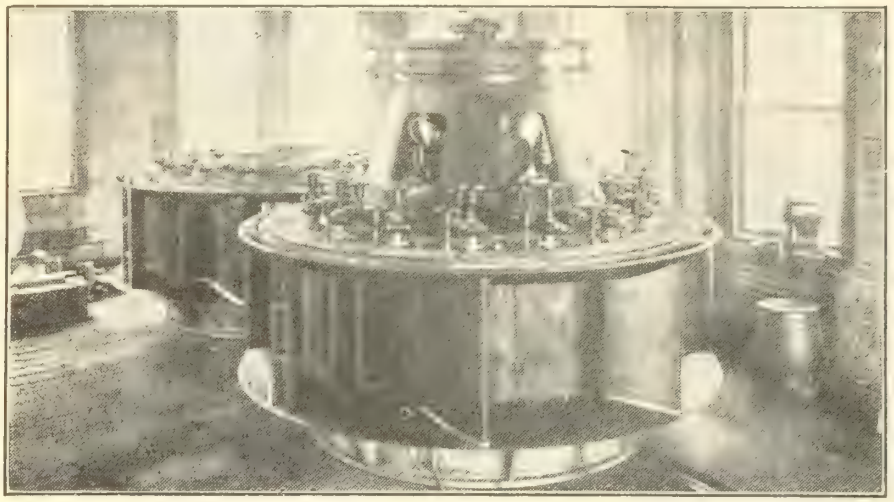
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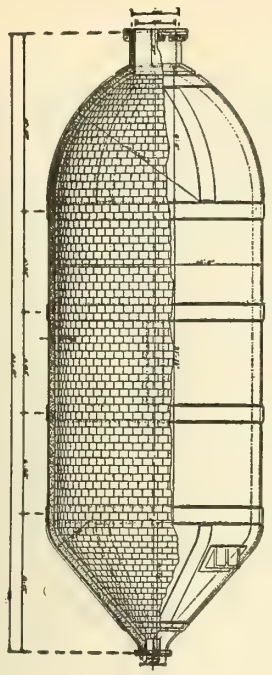
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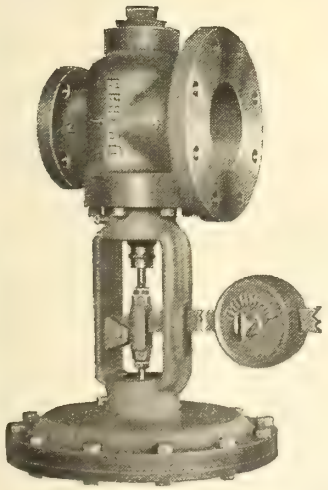
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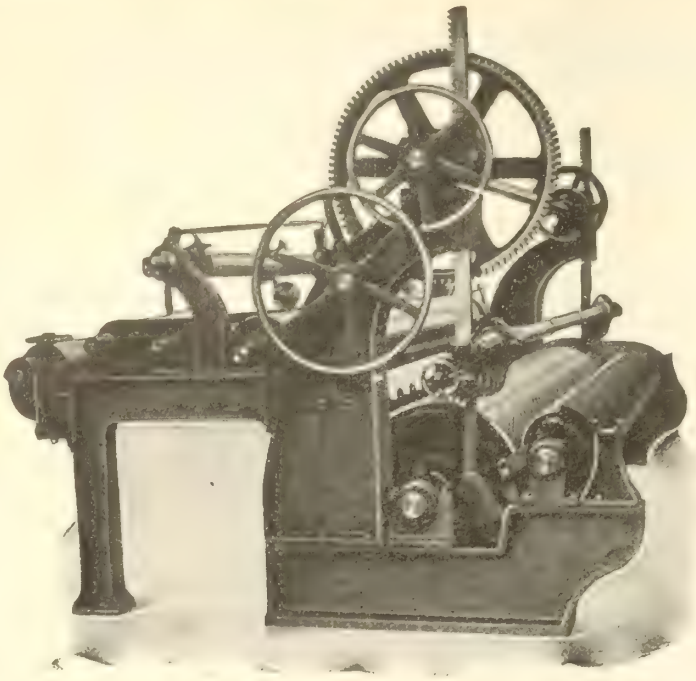
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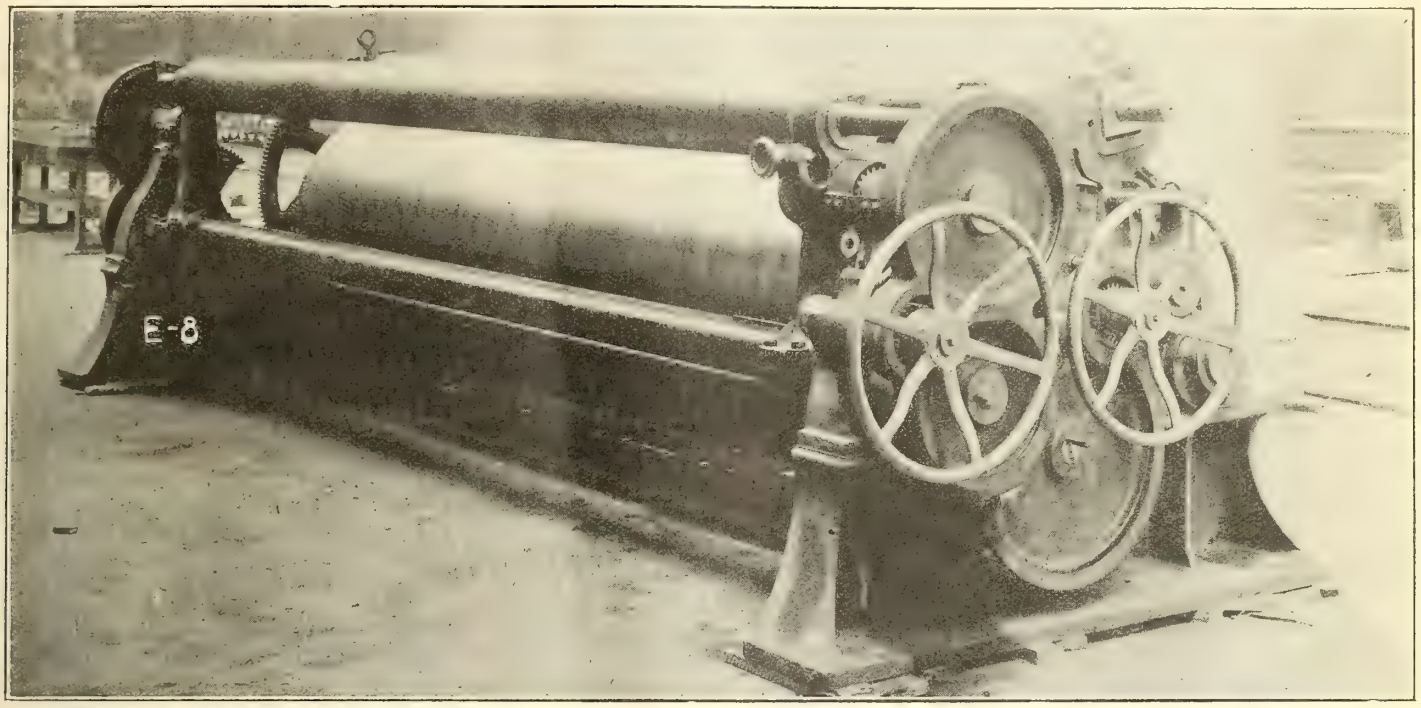
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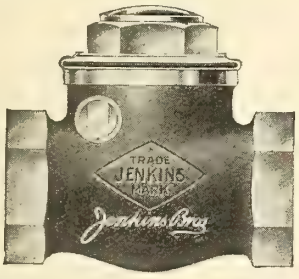
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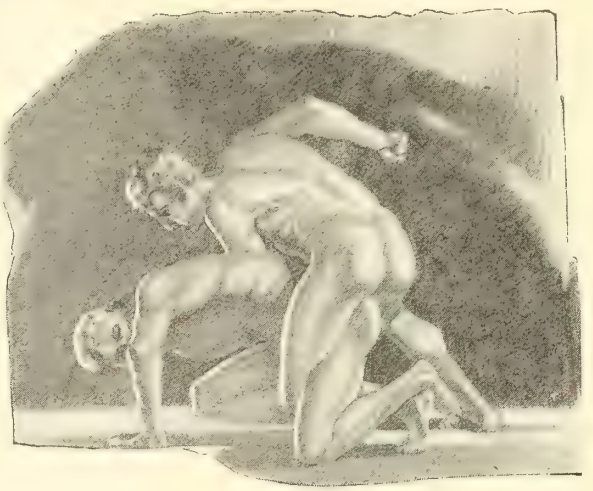
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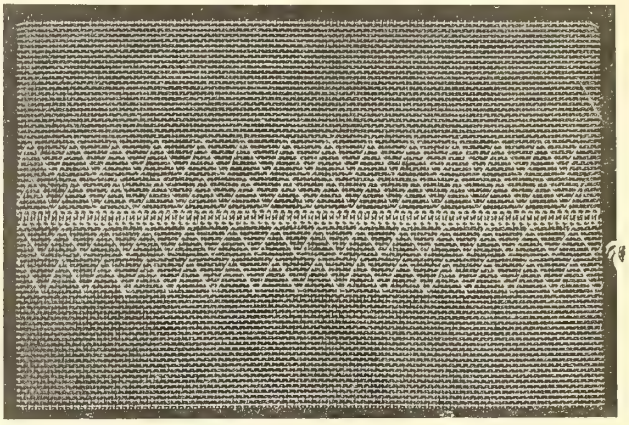
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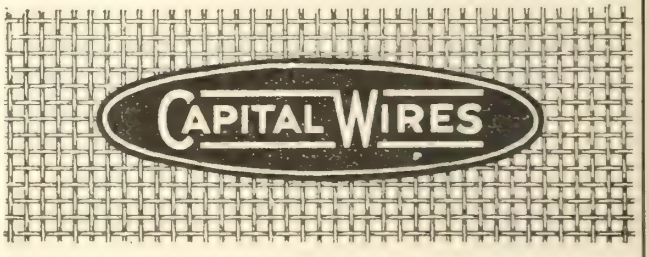
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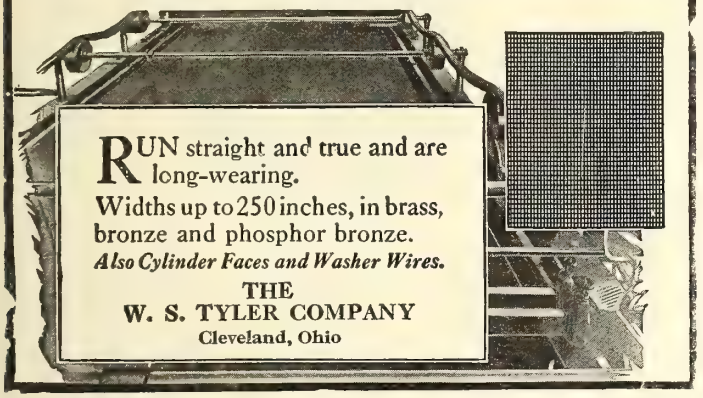
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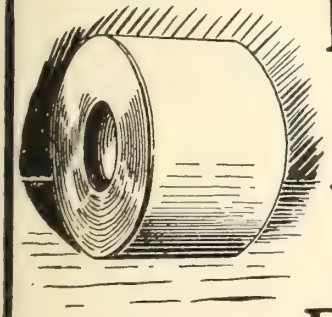


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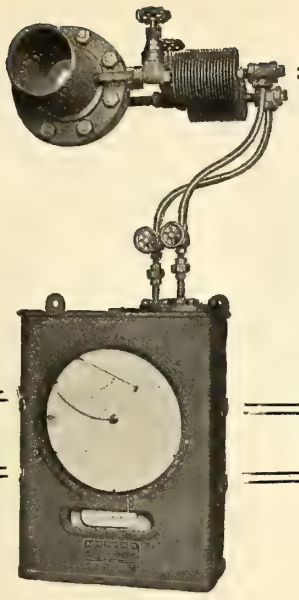
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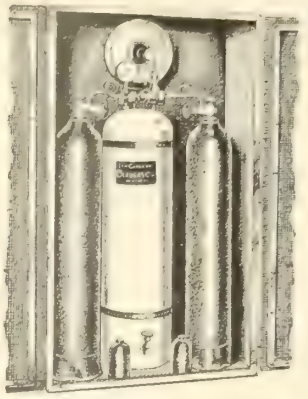
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VOL. XXI. GARDENVALE, QUE., JULY 26th., 1923 No. 29

TABLE OF CONTENTS

Editorial:

What will the visiting foresters see? 741
Is an artificial silk industry possible in Canada? 741
The forest fires 742

Special Articles

American pulpwoods 743
The modern paper plater drive 747
Fiber, its qualities and uses 749

News of the Industry

Stokes preparing forestry exhibit 742
Paper and paper products in 1921 746
Japan's paper production increased in May . 748
Pulp and paper market in Brazil 748
Kraft to be made in Japan 753
Pulp and paper news 756
John F. Carroll given send off 757
Exports showed increase for June 757
Becker to examine our conditions 757
United States notes 760

Miscellaneous Information

White water losses 750
Review of recent literature 754
"The Action of the Beater" (Book notice) . . 759

The Woodlands Section

Are you just gambling? 751
Value of pulp wood exports 751
Extracts from article by Gene Stratton Porter 751
What is a hard-wood tree? 752
Identification of pulpwoods 752
Sees the other side, too 753
Forest fires 753
Forestry Books 753

The Markets

Canadian trade conditions 761
New York markets 762
Paper markets in normal condition 764

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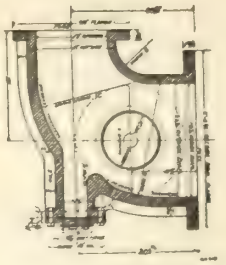
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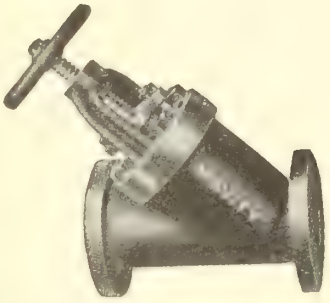
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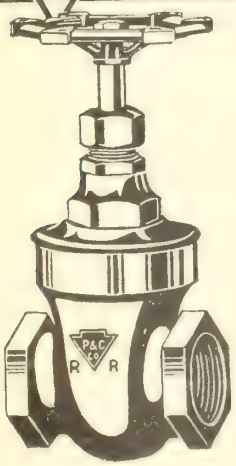
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:-: EDITORIAL :-:

WHAT WILL THE VISITING FORESTERS SEE?

On the occasion of the Imperial Forestry Conference which is taking place in Canada this month and next, and with regard to which mention was made editorially last week, it will be interesting to imagine ourselves going over the ground with the visitors as they traverse Canada from East to West. In 1920 when the first Imperial Forestry Conference was held in Great Britain, the delegates saw the old forests of England and what remains of the old forests of Scotland, together with some replanted areas that demonstrate the value and feasibility of reforestation. What will they see in Canada?

The conference is being held this year in Canada, and the principal topic is the world's softwood supply. Canada is undoubtedly the land of the greatest potential resources of softwood in the British Empire, and by virtue of that position, the Dominion has a very heavy responsibility. It is the duty of Canada to see that this valuable heritage is maintained in a productive condition so that the Empire may always have sufficient supply of this most important material for structural purposes, as well as for the manufacture of many articles of commerce, especially paper. No doubt visitors from overseas, not only from England, but from other parts of the Empire as well, who have never seen Canada will expect to see heavily wooded shores along our magnificent rivers and dense green forests traversed here and there by our wonderful railway systems. We fear that their first impression of Canada as a forest country will suffer and they may get the impression that Canada has practically no wood at all. This impression, of course, will be largely incorrect, and will be created to a considerable extent by the vast distances over which the visitors will travel.

Canada does have enormous areas of forest land, and taken in the aggregate, there is a great deal of timber upon it, but it must be confessed to our shame that a great deal of this land is not *producing* timber. It has grown a wonderful virgin crop and some of it has grown a very satisfactory second crop of trees, but much of the reproduction on land which has been logged over once or a second time has been burned when the new growth has attained an age of one or two up to as much as twenty years. When our visitors consider the condition apart from the extent of our forest land, it is probable that they will wonder where the softwood timber is coming from in the near future.

When the delegates meet in Ottawa for the discussion of the various items on their program, consideration will certainly have to be given to the present condition of Canada's forests and the future supplies of softwood for imperial consumption. Canada is certainly to be congratulated in having, as guests at this critical time in her forest history, a group of men who know conditions in all parts of the Empire and who are qualified to advise our Governments and forest using industries as to the present situation and the probable developments for the future.

There is no doubt about it, the Dominion of Canada should be the store house of softwood for the Empire, and should be the provider of other species as well. This possible and desirable condition of affairs will not be brought about except by a definite policy of practical productive forestry, on the part of all those concerned. It would be most appropriate to take the initial steps under such auspicious circumstances as prevail this summer in Canada.

IS AN ARTIFICIAL SILK INDUSTRY POSSIBLE IN CANADA?

In some quarters there is an idea that the new tariff on artificial silk will promote the establishment of an artificial silk industry in Canada. There are plenty of men associated with the textile industry, however, who deride the notion altogether, and say that artificial silk production in this country is an economic impossibility.

For our part, we confess that, while we have an open mind on the question, we are by no means convinced that the establishment of an artificial silk industry in Canada is so manifestly an economic impossibility. Some of those who avow that it is assert that to start any sort of plant at all would require a capitalization of at least $5,000,000. But would it? There are many small companies in the United States which have either actually started operations or are planning to enter the industry. One such, the Pacific Cellulose Company, Inc., has started operations in its new plant at Walnut Creek, California. This company is capitalized at only $250,000 and reckons on employing

only some eighty hands. If it should turn out that companies with a capitalization of this order can successfully produce artificial silk in the United States, why not in Canada? We shall shortly learn whether small companies in the United States can make a success of artificial silk production. If they can, then surely Canadians will not be found behindhand in profiting by their example.

It looks to us as though there has possibly been too much dogmatizing on this matter. The dogmatists have been proclaiming that artificial silk production in Canada would be possible only to companies able to build plants costing millions and that then, since our own market is, of course, of trifling magnitude, it would be necessary to export most of the product, while, since the United States believes in high tariffs in defence of its own industry, it would be only possible to offer our product in Europe in competition with silks manufactured under conditions of much lower wages and depreciated currencies. Most people have accepted this statement as correct.

The next few months ought to show pretty plainly whether or not some of the many small companies either actually started or planning to enter the industry in the United States will succeed.

The calendar year, 1922. saw Canada's imports of artificial silk yarns and thread touch 2,013,429 dollars.

We are far from convinced that there is not an opportunity here for Canadian enterprise. —A. R. R. J.

THE FOREST FIRES

The newspapers are full of the subject of forest fires these days. At last the public seem to have become conscious of the fact that more millions worth of valuable timber and pulpwood are destroyed each year than would serve to balance the national budget, with plenty over for contingencies. Various means have been adopted to reduce the number of fires, but still the fires are numberless. The blame for the vast majority of these fires is now being placed where it belongs — at the door of the settler who must burn his slash in order to clear the land, and of the lumberman whose operations leave a cut-over area in such a state that a conflagration is almost inevitable. Unlike the steam locomotive, which burns its path through the forest once and for all, these first two agents of destruction and of civilization advance continuously into the forest areas. Until there is some radical change in the administration of our wooded public lands, individual carelessness is bound to result in wholesale disaster. The present attempts at reform are mere palliatives. Until policies are adopted that make each settler, lumberman, prospector or fisherman entering the woods personally responsible for the prevention of fires, we shall continue to suffer this appalling loss.

OUR MOTTO

To put oil on the bearings and sand on the track is to serve efficiently.

We are getting accustomed to congratulating the mills on making new records. This time it is the Abitibi Power and Paper Co.; the average for June was 471.9 tons per day, for the last week of the month was 477.6 tons, and on June 29th over 497 tons were made in 24 hours. On this day also the four-to-twelve shift broke the individual ton record, when they produced 173.36 tons, while the number of breaks, 34 for the entire mill, is the plant record.

STOKES PREPARING FORESTRY EXHIBIT

In the building which the Dominion Government is erecting on the grounds of the British Empire Exhibition and which will cover an area of about one hundred thousand square feet, one-half will be occupied by the Dominion Government's own exhibit, which will reveal the variety and extent of Canada's wealth in farm and forest, mine and waterfall, reads a despatch from Ottawa.

Forest products, having an economic importance second only to agriculture, will be given a prominent position in the Canadian building, and the services of a specialist have been secured from the forestry branch of the Department of the Interior to create an exhibit to illustrate Canada's forest resources. This specialist is W. B. Stokes, of the Forest Products Laboratories of Canada, Montreal, who has just returned from British Columbia, where he has been collecting material for this display.

Speaking of conditions in British Columbia, Mr. Stokes states that the province appeared to be more fortunate than eastern provinces this year in the matter of forest fires. Doubtless weather conditions were the cause of this, but some credit must be given to the unrelaxing vigilance and resources of the Dominion and provincial forest services. The industry in the West is in a sound condition and fully occupied, a result which must be ascribed in some degree to the world-wide extent of its overseas market. The scale on which the timber operations are effected and the organization of industry as a whole were doubtless contributory factors in arriving at this satisfactory condition.

Mr. Stokes is now engaging material in Eastern Canada and is enthusiastic concerning the value of the many various hard woods and soft woods which are available. This value can be seen, Mr. Stokes states, by anyone who visits the wood-using factories of Quebec and Ontario. Wood-users are very conservative, and if manufacturers throughout the Empire can be made to realize the fact that there is a Canadian wood for nearly every purpose, and that for some purposes Canadian woods are the best, they will be slow to seek supplies elsewhere. Imperial sentiment would provide, not the motive for buying Canadian woods, but the opportunity for learning more concerning their value. Canadian forest products are the most versatile as well as the most abundant in the Empire, he states.

American Pulpwoods

The Suitability of Various Species of American Woods for Pulp and Paper Production*

By SIDNEY D. WELLS[1]

The Forest Products Laboratory, Madison, Wisconsin, has in the past received frequent requests as to the suitability of various woods for pulp and paper production and it has therefore seemed advisable to prepare for publication some of the available data on this subject. The laboratory has carried on an extended investigation over a period of more than ten years and has collected experimental pulping data on practically all the possible species of American pulp woods. These data, insofar as the chemical pulps are concerned, have mainly been obtained from experimental cooks made at the Forest Products Laboratory, Madison, Wisconsin, in 100-pound semi-commercial digesters and from studies made on the resulting pulps. It has been found, however, that the general cooking conditions, yield, bleach, consumption, etc., as determined by experimental trials for pulp made from any given wood, compared quite favorably with the results obtained in commercial practice. The data for the various mechanical pulps were obtained from the experiments carried on at the ground-wood laboratory, Wausau, Wisconsin, where a commercial-sized grinder equipment was installed by the Forest Products Laboratory in co-operation with the American Paper and Pulp Association.

The yield of pulp from any given wood depends directly upon the specific gravity of the wood or weight per cubic foot and the pulping method employed. By varying the severity of the pulping treatment both yield and bleach consumption are changed. For example, white spruce sulphite pulp prepared for the manufacture of newsprint paper, would show an entirely different yield and bleach consumption from bleached white spruce pulp prepared for use in a white bond paper, It is therefore, evident that the character and use of the pulp will largely decide the severity of the cooking operation. Certain woods, such as western larch, containing a high percentage of galactan, which is water-soluble, will show a decreased yield by either mechanical or chemical pulping.

Pulping data have been given for woods such as red and white oak, white ash and certain other woods not because we consider these species suitable for pulp purposes, but because the information was available. Many wood-using plants produce considerable tonnage of slabs and mill waste of woods not especially suitable for pulp production, and are interested in a possible outlet for this waste. In some cases, at their direct request, pulping trials have been made on woods known to be unsuitable for pulping purposes. Pulping data on trials made at the Laboratory have been included for two foreign woods; viz., Norway spruce and Scotch pine which are quick growing woods of possible interest for planting purposes. The various woods have been listed, giving the official name as recognized by the Forest Service, also the common names in use and the range covering the growth of that particular species. This information has been taken directly from the "Check List of the Forest Trees of the United States," by George B. Sudworth.

In considering the pulping and other data given for the various woods, attention is drawn to the following points:

1. The weights of wood given are for bone-dry material per solid cubic foot. This is obtained by multiplying the specific gravity of the oven-dried wood based on the green volume by 62.3 lbs. (the weight of a cubic foot of water.)

2. The fiber lengths as given are the average of all the available data taken from the Forest Service investigations and from other sources. Many of the measurements given are the results of averages of thousands of determinations; in other cases from only a few determinations.

3. The yield figures represent the yield of bone-dry screened and unbleached pulp per hundred cubic feet of solid bone-dry wood. For the purposes of this article, it has been assumed that the ordinary cord of rossed wood piled 4′ x 4′ x 8′ is equivalent to 100 solid cubic feet of wood. To convert the yields on bone-dry basis to air-dry pulp containing 10 per cent moisture, divide the yield by 0.9.

The yield data are based on results obtained from experimental runs made under very favorable conditions. The pulp logs on arrival at the Laboratory are barked, sawed into convenient size and any wood containing knots and decayed spots is rejected. The chips are carefully sorted and are far more uniform in size and moisture content than can be obtained in commercial practice unless the mills operate under more favorable conditions than ordinarily exist. Further, each cook representing an individual experiment, it is possible to press, shreds, sample and screen the pulp with fewer mechanical losses than is feasible in handling the pulp in commercial practice from the blow pit to the wet machine or to the finished paper.

4. The comparison of the character and uses of the various pulps that may be obtained from the different woods offers certain difficulties. It has, therefore, been decided to consider white spruce as the standard wood for pulping by the sulphite, sulphate and mechanical processes and to compare the pulp that might be obtained from any given wood by this process of pulping with the pulp obtained from white spruce. Aspen wood has likewise been adopted as the standard for reduction by the soda process, and soda pulps from other woods will be compared with it. Sulphate pulps made from deciduous woods bleach with greater ease economy than the corresponding soda pulps.

The bleachability of sulphate pulps has been given since recent work has demonstrated that with proper methods and equipment sulphate pulps from many coniferous woods can be bleached with average amounts of bleaching powder to a very satisfactory white.

* This is the revision of an article of the same title by Dr. Otto Kress, Sidney D. Wells, and Vance P. Edwardes, published in Paper, July 30, 1919, in which thirty new species have been added and many of those in the original article changed to conform with later experience.

[1] Sidney D. Wells, Engineer in Forest Products, Forest Products Laboratory, U. S. Department of Agriculture, Madison, Wisconsin.

Further, no data are given on the possible soda pulping of the various firs, pines, hemlocks, larch, tamarack and other woods that can be reduced by the sulphate process. The laboratory has made extensive pulping trials on the reduction of these woods by the soda process and it is, of course, recognized that this process can be and is at present employed to a limited extent for reduction of certain of these woods. In general, the soda process can be used for reduction of any wood suitable for the production of sulphate pulp.

No figures have been given for bleach consumption. It has appeared advisable to compare the ease of bleaching for any given pulp with the standard white spruce sulphite and aspen soda pulp.

The data given must, of course, be interpreted with the understanding that the figures and results are based on experimental pulping trials. We believe that it may be of interest if used with this reservation for comparing the character and yields of pulps that may be expected from different woods.

THE SPRUCES

BLACK SPRUCE — *Picea mariana.* Wt. 23 lbs. Fiber 2.6 m.m.

Range — Newfoundland and to Hudson Bay and northwestward to the Mackenzie river; southward in Michigan, Wisconsin, Minnesota, and in the eastern mountains to North Carolina and Tennessee.

Common Names — Black spruce (N.H., Vt., Mass., R.I., N.Y., Pa., W. Va., N.Ca., S.Ca., Wis., Mich., Minn., Ont., Eng.); Double spruce (Me., Vt., Minn.); Blue spruce (Wis); Spruce (Vt.); White spruce (W.Va.); Yew pine (W. Va.); Juniper (N. Ca.); Spruce pine (W. Va., Pa.); He balsam (Del., N. Ca.); Epinette jaune (Quebec); Water spruce (Canada, Me.)

Sulphite Pulp
Yield — 1,050 lbs.
Character — Easily pulped; Easily bleached; Excellent strength and color
Possible uses — —Same as white spruce

Sulphate Pulp
Yield — 1,150 lbs.
Character and uses — Similar to white spruce

Mechanical Pulp
Similar to white spruce

BLUE SPRUCE — *Picea parryana.* Wt. 23 lbs. Fiber 2.8 m.m.

Range — Central Rocky Mountain region—Colorado, Utah and Wyoming.

Common Names — Parry's spruce (Utah); Blue spruce (Colo.); Spruce balsam (Colo., Utah); White spruce (Colo., Utah); Silver spruce (Colo.); Colorado blue spruce (Colo.); Prickly spruce (lit.).

Sulphite Pulp
Yield — 1,050 lbs.
Character — Easily pulped; Easily bleached; Excellent strength and color
Possible uses — Same as white spruce

Sulphate Pulp
Yield — 1,150 lbs.
Character and uses — Same as white spruce

Mechanical Pulp
Similar to white spruce

ENGELMANN SPRUCE — *Picea engelmanni.* Wt. 21 lbs. Fiber

Range — Northern Arizona and through the Rocky Mountain region to British Columbia.

Common Names — Engelmann's spruce (Utah); Balsam (Utah); White spruce (Oreg., Colo., Utah, Idaho); White pine (Idaho); Mountain spruce (Mont.); Arizona spruce (Cal. lit.).

Sulphite Pulp
Yield — 990 lbs.
Character — A little hard to pulp; Excellent strength; Excellent color
Possible uses — Same as white spruce

Sulphate Pulp
Yield — 1,000 lbs.
Character and possible uses — Similar to white spruce.

Mechanical Pulp
Yield — 2,100 lbs.
Character — Strong fiber of good color.
Possible uses — Same as white spruce

NORWAY SPRUCE — *Picea excelsa.*[2] Wt. 30 lbs.

[2]**Range** — From the Urals and Lapland to the Pyrenees and Alps.

[2]**Common Names** — Spruce fir, Common spruce White fir.

Sulphite Pulp
Yield — 1,350 lbs.
Character — Slightly more difficult to reduce than white spruce; Good strength and color
Possible uses — Same as white spruce

Sulphate Pulp
Yield — 1,200 lbs.
Character — Easily pulped; Good strength
Possible uses — Same as white spruce

Mechanical Pulp
Probably the same as the other sprucees

RED SPRUCE — *Picea rubens.* Wt. 24 lbs. Fiber 3.7 m.m.

Range — Nova Scotia to North Carolina and Tennessee. Range imperfectly known.

Common Names — Red spruce; Yellow spruce (N.Y.); North American red spruce (foreign lit).

Sulphite Pulp
Yield — 1,080 lbs.
Character — Easily pulped; Good strength; Easily bleached; Excellent color
Possible uses — Same as white spruce

Sulphate Pulp
Yield — — — 1,150 lbs.
Character — High-grade strong fiber
Possible uses — Same as white spruce

Mechanical Pulp
Yield — 2,400 lbs.
Character — Excellent strength and color
Possible uses — Similar to white spruce

SITKA SPRUCE — *Picea sitchensis.* Wt. 24 lbs. Fiber 3.5 m.m.

Range — Coast region (extending inland about fifty miles from Alaska to northern California (Mendocine County).

Common Names — —Tideland spruce (Cal., Ore., Wash.); Menzies' spruce; Western spruce; Great Tideland spruce (Cal. lit.).

Sulphite Pulp
Yield — 1,080 lbs.

[2] From English data.

Character — Easily pulped; Easily bleached; Excellent strength and color
Possible uses — Same as white spruce

Sulphate Pulp
Yield — 1,150 lbs.
Character and uses — Similar to white spruce

Mechanical Pulp
Yield — 2,040 lbs.
Character — Slightly grayish color
Possible uses — Similar to white spruce

WHITE SPRUCE — *Picea canadensis.* Wt. 24 lbs. Fiber 2.8 m.m.

Range — Newfoundland to Hudson Bay and northwestward to Alaska; southward to northern New York, Michigan, Wisconsin, Minnesota, South Dakota, Montana, and British Columbia.

Common Names — White spruce (Vt., N.H., Mass., N.Y., Wis., Mich., Minn., Ont.); Single spruce (Me., Vt., Minn.); Bog spruce (New Eng.); Skunk spruce (Wis., Me., New Eng., Ont.); Cat spruce (Me., New Eng.); Spruce (Vt.); Pine (Hudson Bay); Double spruce (Vt.).

Sulphite Pulp
Yield — 1,030 lbs.
Character — Easily pulped; Easily bleached; Excellent strength and color
Possible uses — White spruce is considered the standard sulphite pulpwood and is used for news, wrapping, book, high-grade printings, etc.

Sulphate Pulp
Yield — 1,150 lbs.
Character — Very strong fine fiber.
Possible uses — Highest grade of kraft paper and strong fiber board.

Mechanical Pulp
Yield — 2,400 lbs.
Character — Excellent strength and color
Possible uses — For practically every purpose where groundwood pulp is required.

THE PINES

LIMBER PINE — *Pinus flexilis.* Wt. 23 lbs. Fiber

Range — Rocky Mountain region from Montana to western Texas (Guadalupe and Limpia mountains) and New Mexico; in mountains of northern Arizona, Utah, Nevada and California (Inyo Mountains and Mount Sillman).

Common Names — White pine (Cal., Nev., Utah, Colo., N. Mex.); Pine (Utah, Mont.); Bull pine (Colo.); Rocky Mountain white pine (Cal.); Rocky Mountain pine; Limbed-twig pine (Cal. lit.); Western white pine (Cal. lit.) Arizona flexilis pine.

Sulphite Pulp
Yield — 1,000 lbs.
Character — Difficult to pulp and bleach; Fair strength but shivey and poor color.
Possible uses — Few

Sulphate Pulp
Yield — 1,040 lbs.
Character —Good strength and color; Fairly easily bleached
Possible uses — Similar to white spruce

Mechanical Pulp
Probably the same as white pine

PINON PINE — *Pinus edulis.* Wt. 31 lbs. Fiber 2.0 m.m.

Range — From Colorado (eastern base Pikes Peak) through New Mexico and to western Texas (mountains.)

Common Names — Pinon (Tex., Colo.); Nut pine (Tex., Colo.); Pinon pine (Colo.); New Mexican pinon (lit.)

Sulphite Pulp
Yield 1,330 lbs.
Character — Easily pulped; Difficult to bleach;

Sulphate Pulp
Fair strength. somewhat shivey, and fair color.
Yield 1,300 lbs.
Character and uses — Similar to white spruce

Mechanical Pulp
Probably the same as white pine

SUGAR PINE — *Pinus lambertiana.* Wt. 23 lbs. Fiber 4.1 m.m.

Range — Coast region from Oregon (head of McKenzie and Rogue rivers) to California (Sierra Nevada Mountains and coast ranges to Santa Lucia Mountains; San Bernardino and Cuyamaca mountains.)

Common Names — Sugar pine (Cal., Oreg.); Big Pine; Shade pine (Cal.) Great sugar pine; Little sugar pine; Gigantic pine (Cal. lit.); Purple-coned sugar pine.

Sulphite Pulp
Yield — 1,010 lbs.
Character — Easily pulped; A little difficult to bleach; Poor strength; Fair color
Possible uses — Dark colored wrappings

Sulphate Pulp
Yield — 1,150 lbs.
Character — Fairly easily bleached
Possible uses — Similar to white spruce

Mechanical Pulp
Probably the same as white pine

WHITE PINE — *Pinus strobus.* Wt. 22 lbs. Fiber 3.8 m.m.

Range — From Newfoundland (White Bay region) and along the northern shores of St. Lawrence Gulf to northern Ontario (near Abitibi and Nipigon lakes) southern Manitoba (near southern end of Lake Winnipeg); southward through Northern and Eastern Minnesota, Northeastern (Mitchell county) and eastern border of Iowa (to Scott county), northern (counties) Illinois, southern shores of Lake Michigan, southern Michigan (North of Allegan, Eaton, and St. Clair counties), northeastern and eastern (border counties) Ohio, Georgia (Tallulah Falls.)

Common Names — White pine (Me., N.H., Vt., Mass., R. I., Conn., N.Y., N.J., Pa., Del., Va., W.Va., N.C., Ga., Ind., Ill., Wis., Mich., Minn., Ohio, Ont., Nebr); Weymouth pine (Mass., S.C.); Soft pine (Pa.); Northern pine (S.C.); Spruce pine (Tenn.).

Sulphite Pulp
Yield — 1,210 lbs.
Character — Difficult to pulp; Difficult to bleach; Fair strength, but shivey and poor color
Possible uses — Few

Sulphate Pulp
Yield — 1,100 lbs.
Character — Excellent strength and color; Fairly easily bleached
Possible uses — Similar to white spruce

Mechanical Pulp
Yield — 1,890 lbs.
Character — Good strength and color, but pitchy.
Possible uses — Similar to white spruce.

JACK PINE — *Pinus divaricata.* Wt. 24 lbs. Fiber 2.5 m.m.

Range — New Brunswick to New Hampshire and west through Great Lake and Hudson Bay (Southern shores) region to Great Bear Lake, Mackenzie river, and Rocky Mountains; south into northern Maine, northern New York, northern Indiana and Illinois, and central Minnesota.

Common Names — Scrub Pine (Me., Vt., N.Y., Wis., Mich., Minn., Ont.); Gray pine (Vt., Minn., Ont.); Jack pine (Mich., Minn., Canada); Princess pine (Ont.); Black jack pine (Wis.); Black pine (Minn.); Cypress (Quebec to Hudson Bay); Canada Horn-cone pine (Cal. lit.); Chek pine; Sir Joseph Bank's pine (Eng.); "Juniper" (Canada); Banksian pine (lit.)

Sulphite Pulp
Yield 1,080 lbs.
Character — Not easily pulped; Very difficult to bleach; Fair strength; Poor Color; Pulp shivey and full of pitch.
Possible uses — Mechanical difficulties when running this pulp over the paper machine prevent its use.

Sulphate Pulp
Yield 1,150 lbs.
Character — Very strong tough fiber; Fairly easily bleached
Possible uses — Similar to white spruce

Mechanical Pulp
Yield 2,130 lbs.
Character — Gray, somewhat soft, good strength, pitchy, poor finish.
Possible uses — Medium grades of groundwood.

LOBLOLLY PINE — *Pinus taeda.* Wt. 30 lbs. Fiber 3.0 m.m.

Range — South Atlantic and Gulf States from New Jersey (Cape May), southern Delaware and West Virginia (Wood, Mineral, Hampshire, and Hardy counties) to central Florida (Cape Malabar and Tampa Bay) and west to eastern exas (Colorado River; in Bastrop County); northward into southeastern Indian Territory, Oklahoma, Arkansas, and southern border of middle and west Tennessee.

Common Name — Loblolly pine (Del., Va., N.C., S.C., Ga., Ala., Fla., Miss., La., Tex., Ark.,); Oldfied pine (Del., Va., N.C., S.C., Ga., Ala., Fla., Miss., La., Tex., Ark.); Torch pine (Eng. lit.); Rosemary pine (Va., N.C., in part); Slash pine (Va., N.C., in part); Longschat pine (Del.); Longshucks Md., Va); Black slash pine (S.C.); Frankincense pine (lit); Shortleaf pine (Va., N.C., S.C., La.); Bull pine (Texas and Gulf region); Virginia pine; Sap pine (Va., N.C.); Meadow pine (Fla.); Cornstalk pine (Va., Md.,); Black pine (Va., Foxtail pine (Va., Md.,); Indian pine (Va., N.C.); Spruce pine Va., in part); Bastard pine (Va., N.C.); Yellow pine (north Ala., N.C.); Swamp pine (Va., N.C.); Longstraw pine (Va., N.C., in part.)

Sulphite Pulp
Yield — 1,140 lbs.
Character — —Easily pulped; Difficult to bleach; Good strength and color
Possible uses — As a substitute for white spruce

Sulphate Pulp
Yield — 1,420 lbs.
Character — Fairly easily bleached; Strong but coarse fiber
Possible uses — Similar to white spruce

Mechanical Pulp
Yield — 2,450 lbs.
Character — Short fiber and very pitchy
Possible uses — Only when mixed with better grades of groundwood fibers.

LODGEPOLE PINE — *Pinus murrayana.* Wt. 24 lbs. Fibre 2.3 m.m.

Range — From Alaska (Yukon river) and southward through interior British Columbia; the mountains of Washington and Oregon to California (Sierra Nevada Mountains to San Jacinto Mountains); plateau east of the Rocky Mountains (latitude 56) and south through the Rocky Mountain region to New Mexico and Northern Arizona. Also Coast region from Alaska to California (Mendocino county).

Common Names — Tamarack (Wyo., Utah, Mont., Cal.); Prickly pine (Utah); White pine (Mont.); Black pine (Wyo.); Lodgepole pine (Wyo., Mont., Idaho); Spruce pine (Colo., Idaho, Mont.); Tamarack pine (Cal.); Murray pine (Cal. lit.); Scrub pine; Knotty pine; Sand pine; (Oreg.); Bolander's pine; Henderson's pine; North Coast Scrub pine Cal. lit.).

Sulphite Pulp
Yield — 1,080 lbs.
Character — Easily pulped; A little hard to bleach; Excellent strength and color
Possible uses — As a substitute for white spruce

Sulphate Pulp
Yield — 1,120 lbs.
Character and uses — Same as white spruce

Mechanical Pulp
Yield — 2,140 lbs.
Character and uses — A little pitchy, but otherwise similar to white spruce.

NOTE — The lodgepole pine which grows in the lowlands in the coastal region is very similar to jack pine. The Rocky Mountain region lodgepole pine, however, contains much less pitch and is to be preferred for sulphite and mechanical pulps.

(To be continued)

PAPER AND PAPER PRODUCTS VALUES IN 1921

The census bureau reports for 1921 show the value of the product of the paper and pulp mills of the United States totaled $667,435,847, and the manufacturers of paper totaled $385,747,017. Of the latter figure, $215,000,000 represents the value of paper boxes and paper bags not made in paper mills. The paper industry even in this year of depression therefore, produced $1,000,000,000 worth of materials. The printing and publishing industry added over two billion dollars to the total, making with related industries a total product of the paper and printing industry valued at $3,162,731,414.

THE MODERN PAPER PLATER DRIVE

By A. F. PAIGE, Sales Engineer Westinghouse Elec. and Mfg. Company, Springfield, Mass.

Paper platers are used to produce linen or other special surfacings to sheet papers. The sheets are stacked in a book between sheets of zinc, linen, cardboard, etc., depending upon the surface desired. The complete book is placed between thin metal covers. The finish is applied to the paper by the pressure of the rolls when passing the book back and forth between them. This is usually effected by reversing the direction of rotation of the plater rolls.

The modern paper mill uses individual electric drives liberally and obtains thereby greater production per machine at less labor, power and space cost. The individual electric motor drive eliminates expensive belting, countershafts with their disagreeable oily bearings, etc., and permits more effective lighting, thereby improving health and morale of operators and reducing wastage.

The more common types of plater drives are the belt drive and the individual motor drive. Both of these drives are usually reversing. The motor used with the belt driven plater requires no special consideration. The constant reversals, however, are unusually severe on the belts, causing them to be short lived. Further, the belt slippage upon reversal is considerable and involves the absorption of quite a bit of energy and the loss of time. One example of the belt driven plater is shown in Fig. 1.

To eliminate belts, countershafts, oil bearings, etc., of the belt driven plater, there was devised the individually motor driven plater, as shown in Fig. 2. This drive is simple, rugged and compact. The phase wound reserving motor has high torque characteristics. It is mounted on a bedplate common to the plater and coupled to the plater pinion shaft. The external rotor resistance assists in keeping the motor cooled by dissipating outside of the motor much of the heat of the reversal. The control consists of three units, viz., a three position master switch, a cabinet enclosed contactor panel, and an oil circuit breaker primary switch. The small drum controller, or master switch, with one forward, one reverse and one off position is mounted on the end of the plater table with a short piece of flexible conduit attached to allow the table to be raised or lowered. The length of travel of the switch handle is very short, and, therefore, does not tire the operator's wrist. This master switch controls the two magnetically operated contactors of the contactor panel. The contactors are mechanically interlocked, one furnishing power to drive the plater forward, the other to drive the plater in the reverse direction. Consequently, the control is extremely simple.

The oil circuit breaker is used to disconnect the con-

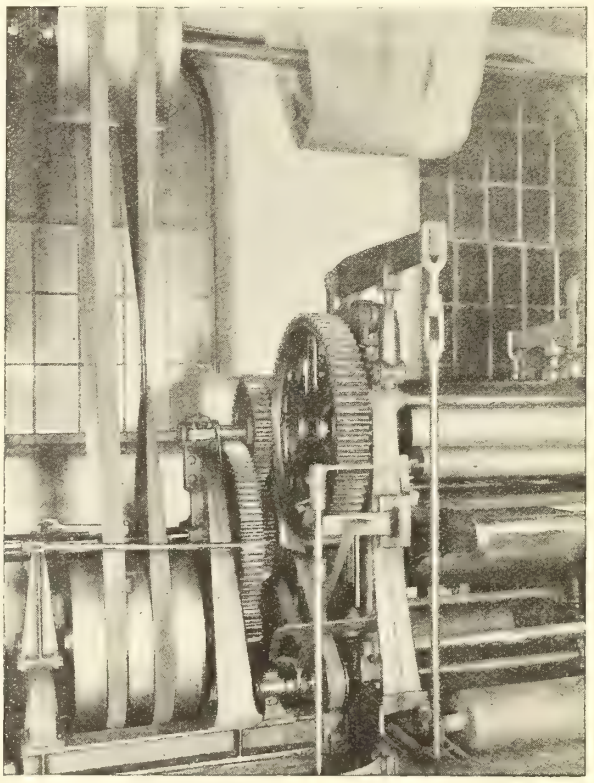


Fig. 1.

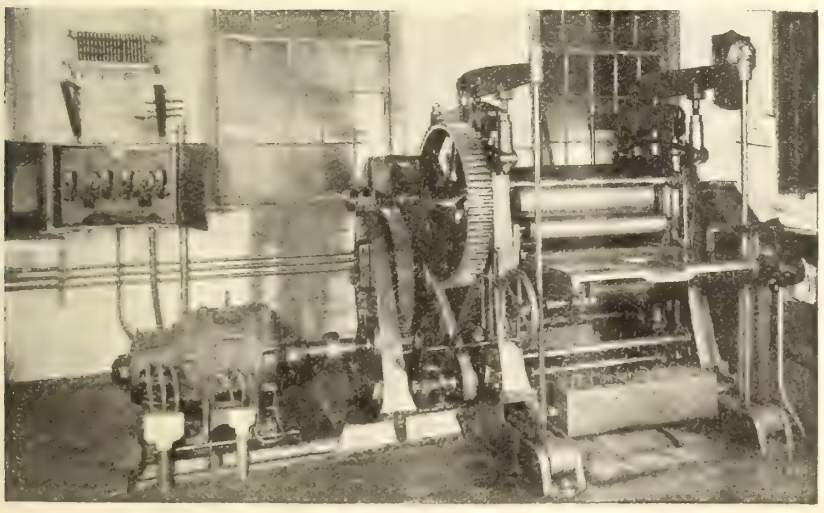


Fig. 2.

trol circuit from the power source and functions to protect the equipment from extreme overloads.

As the duty of the reversing plater drive is rather heavy, the equipment is made rugged to withstand this type of service. Ordinarily, the plater will be reversed from 10 to 20 times a minute, but when starting to plate a thick book that is full of air, the reversals may reach a frequency of 30 to the minute.

The paper mill in which the Norwood Engineering Company equipment of Fig. 2, is installed, increased its production on this plater by 20 per cent, after replacing the belt drive by the reversing motor drive. The shorter time of reversal and the increased speed of the rolls made possible by direct motor drive permitted this increased production. This 36″ plater having 17″ diameter rolls and operated at 20 r.p.m. plates 72 books of very high grade bond in 2½ hours at an energy expenditure of 10.8 KW. hours. The books consisted of 125 sheets each, 28″ by 34″ of 41 paper.

JAPAN'S PAPER PRODUCTION INCREASED IN MAY

Twelve leading paper mills, members of the Japan Paper Association, produced during the month of May 64,800,000 lbs. and sold 64,180,000 lbs. This is an increase of 907,000 lbs. in production and 2,924,000 lbs. in sales compared with those of the preceding month.

Compared further with those of the same month of last year, it is an increase of 10,830,000 lbs. in production and 7,632,000 lbs. in sales.

To be more accurate the following table will show the details of the above figures.

	Produced lbs.	Sold lbs.
High grade printing paper..	10,184,000	9,384,000
Printing	10,679,000	10,437,000
News	28,060,000	29,782,000
Japan simile	4,168,000	3,423,000
Machine made Japanese paper	1,276,000	1,439,000
Match	812,000	760,000
Colored	1,083,000	1,000,000
Wrapping	2,957,000	2,728,000
Chinese	574,000	338,000
Miscellaneous	5,003,000	4,899,000
Totals	64,800,000	64,193,000
Grand Totals Jan.-May	305,076,000	315,838,000

NEWSPRINT OUTPUT INCREASED 15 P.C.

Newsprint production, United States and Canada, for the first five months of 1923, was 15 per cent. more than for the first five months of 1922 and 34 per cent. more than for the same period in 1921, according to a statistical review compiled by R. S. Kellogg, secretary of the Newsprint Service Bureau, New York.

Imports of newsprint into the United States for the first three months of 1923 were 27 per cent. more than in the first three months of 1922 and 59 per cent. more than in the same period of 1921.

Exports of newsprint from the United States for the first four months of 1923 were 40 per cent. less than in the first four months of 1922 and 23 per cent. less than in the same period of 1921.

Mill stocks of newsprint at United States and Canadian points were 4 per cent. more on May 31, 1923, than on May 31, 1922, and 34 per cent. less than on May 31, 1921.

PULP AND PAPER MARKET IN BRAZIL

The market for paper and pulp is a very difficult one from the point of view of Canadian export, writes Canadian Trade Commissioner E. L. McColl, from Rio de Janeiro, under date of June 22 in the Commercial Intelligence Journal. The United States is finding great difficulty in obtaining a share of the business in competition with Germany, Austria, Holland, Norway, Sweden, and Finland. During the nine months ending March, 1923, the United States shipped to Brazil newsprint to the value of $155,000, and book paper, not quoted, to the value of $132,000. Other papers exported are estimated to value roughly $73,000, or a total for the nine months of $360,000, or $480,000 per year. Brazil imported paper of all kinds in 1922 to a value of $2,250,000.

One of the handicaps under which Canadian exporters suffer is in the matter of freight rates, which are three times as great from New York to Rio de Janeiro as they are from Christiania, Rotterdam, or Hamburg. Freight rates from New York run from $11 to $21 per ton, according to the class of paper Newsprint stands about midway at $16 per ton of 2,240 pounds. Newsprint from the above-mentioned European ports is 25s or about $5.80 per metric ton. When also the fact is considered that European prices are on the whole 10 per cent. les than those from North America, the difficulty of obtaining a strong foothold in Brazil may be fully realized.

The newsprint market is controlled by Finland, Norway, and Sweden. A contract just made for newsprint from Finland specifies that 200 tons should be delivered by August 15 and thereafter 100 tons per month until 1,300 tons had been received. The price is equivalent to $76 per ton f.o.b. Helsingfors (United States manufacturers quote a factory price of approximately $80.50 per ton.

The supply of super-calendered hardsized printing, second grade or imitation bonds, general magazine and job printing paper, are imported from Holland, Germany, and Austria. Dutch hardsized printing in sheets of 25 by 38 inches and in weights from 50 to 75 grams per square metre is quoted at the equivalent of $138 f.o.b. Amsterdam, whereas United States f.o.b. prices for an equivalent paper are about $154 per ton. High-class papers cannot be sold here in quantity, as the consumers will not pay the price; good German papers of medium-quality finish at considerable lower cost are finding a ready sale and second-grade wrapping papers are made locally and so protected by duties that the foreign article cannot be imported. High-grade kraft papers are the exception as the people will not pay for them. The consumption of miscellaneous papers, including bristols or cardboards, blotting, cover, or coated papers, is not considerable, buyers purchasing from one to three years' supply at a time. Quotations recently received on easy bleaching sulphite pulp were the equivalent of $79.87 per ton f.o.b. European port.

Samples of papers made in Brazil and the names of the Brazilian importers may be obtained on application to the Department of Trade and Commerce, Ottawa.

What of society which rejects Jesus and embraces Jazz?

FIBRE, ITS QUALITIES AND USE

By HAROLD E. SALTON

After cotton materials have served their purpose in clothing mankind they are no longer thrown on the scrap pile; their usefulness is not ended, modern chemistry has made possible the reclaiming of old waste, turning it into a variety of useful articles. In "Raw Material" we read the story of hard fibre—old cotton rags rescued from the scrap pile, washed and cleaned and converted into a new material several times stronger than leather, tougher than some metals, yet lighter than aluminum. Its unusual toughness is especially noteworthy. No ordinary force can cause it to dent, crack, split, break or splinter. It actually improves with age, is impervious to oil or grease, is unaffected by all ordinary organic solvents and will not crystallize under severe vibration.

The basic raw materials from which fibre is made by all the vulcanized fibre manufacturers is cotton-cloth rags, while that of the horn-fibre manufacturers is jute cord and burlap rags.

If fibre were limited to any one set of physical qualities it is obvious that its application would be similarly limited to one or two industries, but as a matter of fact, sixty years of industrial tests have shown that fibre is an unusual material in almost the same sense as that term is applied to steel. "Raw Material" has collected a list of over 300 structural and mechanical purposes for which fibre is used today in scores of manufacturing industries. These range all the way from flexible washers and gaskets to hard, dense gear wheels; and from automobile parts and accessories of many kinds to the innumerable forms of usefulness fibre assumes in the electrical manufacturing industry.

The most basic distinction between grades of fibre consists in the determination of the kind of rags from which they are made. Cotton, linen, hemp and jute rags together with wood pulp are all converted into material called fibre.

Only the higher grades of rags, such as cotton and linen are made into vulcanized fibre, the jute and hemp being largely made into soft fibre boards. But as some of the poorer grades of cotton rags are also worked into soft fibre boards another distinction can be made in this classification of fibres by dividing them into two classes, viz:

(1) Vulcanized and

(2) Unvulcanized.

(1) All the vulcanized varieties receive a chemical treatment which more or less gelatinizes the individual fibres after which mechanical treatment of the mass solidifies it into a homogeneous whole.

(2) The unvulcanized varieties are not gelatinized by a chemical treatment but depend upon prolonged mechanical treating for perfect disintegration into a pulpy mass, which is readily formed by the mechanical treatment into the finished fibre sheets. Such fibres are most frequently made from hemp and jute rags and approximate the color of horn in their finished condition, consequently the name horn-fibre is frequently given to this grade of fibre products.

It is almost safe to say that no other material enjoys such a combination of qualities as fibre. It possesses the properties of many non-metallics and has many characteristics of the metals. It has the strength, lightness, toughness, resiliency, non-crystallizing and non-conducting power of wood, only in a superior degree, while it is non-cracking, non-splintering and possesses resistance to heat, to many solvents and to the deteriorating influences of time which qualities characterize many metals.

Fibre can be fabricated by similar quantity production methods and by almost identical tools used in working other materials, and hence its combination of qualities requires no extensive changes on the part of the manufacturer adopting it. Fibre is fabricated with little more difficulty than wood and leather, it dulls the tools faster, but in this respect can hardly be compared with the metals.

It may be said that for the most of the purposes for which it is employed fibre really has no competitors because of their lack of similar properties. But in some few cases in which fibre comes into active competition with wood, comparison of the working life of the two materials promptly settles the question of relative economy.

Aside from the strength and resistance of fibre to stress



"Silent Waterproof Gear"

and to electrical tension, it should be remembered that it is non-absorptive of oil, gasoline, benzine, alcohol, acetone, etc. but is slowly corroded by many acids.

Dry heat does not soften fibre and it will not melt under any conditions. With increasing temperature it becomes more and more brittle but retains its strength and insulating properties until it chars at about 350 deg. F. When subjected to steam and atmospheric pressure, however, fibre softens and may be bent or otherwise shaped into any form whose retention is desired after drying.

While fairly good water-proof qualities can be imparted to ordinary grades of fibre used in places exposed to open atmosphere, by covering with shellac or impregnating with paraffin, such methods do not entirely eliminate working difficulties.

After ten years of exhaustive laboratory experiments success was finally achieved in producing two thoroughly water-proof fibres. These two grades of fibre as produced to-day possess fabricating properties similar to those of ordinary fibre grades.

Quantity production of machined parts by the consumer of fibre is vastly facilitated by the primal forms in which it is sold by the manufacturer viz: sheets, tubes and rods. A natural outgrowth of the business of manufacturing these forms was the auxiliary industry of fabricating the raw materials into finished parts.

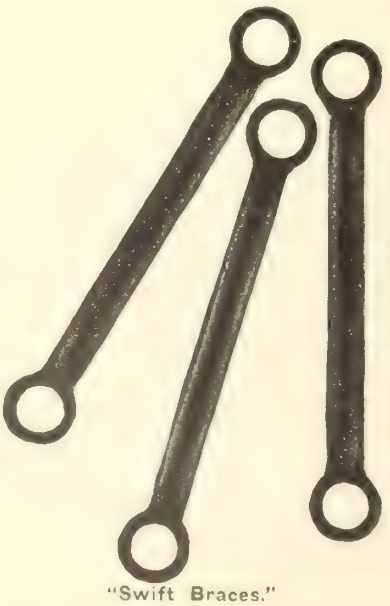
It is a notable fact that most large fibre consumers of to-day began their purchases in an experimental way and for one or two purposes, but in the natural course of events found more and more purposes for which the material could be utilized with great manufacturing advantage and economy.

The writer wishes to call attention to the rapidly growing use of fibre in the textile industry. Some of the many ways in which fibre is replacing other materials is well illustrated by listing some of its many uses, viz: spool heads, bobbin boxes, loom picks, shuttles, swift braces, shuttle box liners, thrust washers, lacing combs, gears, picker stick ends, spindle guards, receptacles, roving cans, trucks, boxes, gill cans, warehouse cars, etc.

An example of the advantages resulting from the use of fibre is shown in its use as head for spools and bobbins. Whenever a spool head breaks it means a loss because that yarn is wasted and a pound of silk worth five or six dollars off the bobbin is worth barely a dollar in waste. Then again splintering in the head of a spool or bobbin causes chafing of the yarn and breakage resulting in a loss of time and money. So that from a purely economical standpoint the durable, non-splintering, fibre head, is well worth consideration by mill men. Then again fibre can be finished with a smooth glossy surface and its color being incorporated in the material, there is no danger of its running and injuring the fabrics.



"Roving Cans."



"Swift Braces."

And so, in the opinion of the writer, many industries now using fibre in a limited way are practically certain to become important consumers in the course of time and for some manufacturers who are not consumers at present, fibre is indeed the inevitable material.

The accompanying cuts were kindly supplied to us by the Dominion State Fibre Company, of Canada, Ltd.

WHITE WATER LOSSES

BY W. G. MacNAUGHTON

If I could been present at your meeting I would have talked on white water losses and told you something of what is being done in the industry. As I cannot be in attendance I will present a few thoughts which, if they provide a basis for discussion may be as productive of value as if I were present.

We know that in all mills there is loss of material, mostly fiber but we know of few mills that can give any accurate estimate of this form of waste either in actual quantity by weight or in percentage of the daily product.

If the shrinkage in conversion is down to 5% or less by the accounting figures usually every one is satisfied even though the sewer discharge is easily seen to contain stock.

Since, in a paper mill, particularly if there are pulp mills in connection and the groundwood and sulphite is slushed, and the best accounting figures are a guess, there should be a check somewhere if it is possible. In some mills, and it may have been your experience, the figures have shown that 100 lb. of paper had been made all during the month from 99 lb. of stock even without allowing for the difference of 3% of moisture between the paper and the calculated weight of the pulp.

I do not want to talk on cost accounting but it is valuable for the superintendent and the accountant to see that the records are based on reason as well as on apparent fact.

Since in many mills from the nature of things it is impossible to get the actual weight of the stock used while it is in process, it is very evidently necessary to have as many checks as possible.

Checks that are wanting in most of the mills are the quantity of water discharged from the mill and the amount of material per 1,000 gallons it contains.

It has been found that of two mills making the same product under the same general conditions of manufacture, one uses, that is discharges, 10,000 gallons of water per ton while the other uses over 25,000 gallons. The fiber in the effluent per 1,000 gallons might be the same yet the second would be losing 2½ times the first.

It is very good to have screen savealls and to give attention to their upkeep but it is becoming recognized that in addition the value of the effluent be measured and tested for the quantity of material it carries.

*An address to Pulp and Paper Mill Superintendents, Association, May 18-19.

Woodlands Section

ARE YOU JUST GAMBLING?

By O. M. PORTER

Secretary-Treasurer, The Woodlands Section

$1,000,000,000 represents the invested capital of the pulp and paper mills of the United States.

$1,000,000,000 represents the value of the paper produced annually by this investment.

$250,000,000 were paid for pulpwood and wood pulp by the United States pulp and paper industry in 1922; and only an equivalent amount for all the rest of the necessary raw materials—rags, waste papers, coal, sulphur, bleach etc.

Eighty-one per cent. of the pulp and paper mills of New England, New York, and the Lake States are entirely dependent on purchase for their supplies of pulpwood.

We import from Canada about 20 per cent. of our annual consumption of pulpwood. Canada's forests are not unlimited. Their conservationists are trying very hard to extend the export embargo to freeholds.

Where is *your* pulpwood coming from five, fifteen or fifty years hence?

The paper industry of the United States could well afford a comprehensive survey of the pulpwood resources of the United States, and a study of the factors tending to increase our domestic production of pulpwood. This would include present methods of fire prevention and suppression in the several pulpwood forest regions; costs and yields from artificial reforestation; and outlines for the practical management of timbered areas, with the view to sustaining their production of pulpwood and saw timber.

Are you gambling with the situation? Do you contemplate complete amortization of your plant and equipment within the next decade or so? Do you expect to move South, North or West? Or have you insured your continuous operation by a sufficient acreage of timberland to supply at least a portion of your actual pulpwood requirements?

The Woodlands Section of the American Paper and Pulp Association advocates:

1. A comprehensive survey of our domestic supplies of the paper industry's basic raw material—pulpwood.
2. A careful study of the probable costs and yields from artificial reforestation.
3. The development of practical plans for forest management to insure continuous production.
4. Sound Federal and State forest legislation .
5. Forest education—for the public, the owner and the operator.

BECKER TO EXAMINE OUR CONDITIONS

London, July 24. — Sir Frederick Becker, who is sailing for Quebec tomorrow, is going West to examine transportation and other conditions, according to a cable to the "Montreal Star".

He is preparing big scale experiments in England for the production of paper from wheat straw, and will also make investigations in Canada concerning this possibility.

EXTRACTS FROM ARTICLE BY GENE STRATTON-PORTER

In McCall's Magazine for April, 1923.

I have lived to see the enormous prices set upon furniture made from walnut, oak, cherry, and bird's-eye maple. While writing this article, I read of a black walnut tree just sold in Indiana, from the stump of which alone, four thousand dollars' worth of fine veneer was to be made, and if the trunk were solid and proved to be as finely marked as was hoped, it would swell the value to unbelievable figures for a tree.

Who can estimate the appalling waste in the burning of those indiscriminate log heaps! I used to marvel at the gorgeous smoke ascending in wreaths and banners of lavender, pink, blue, red, grey from those green logs!

* * *

I have not been accustomed to considering myself among the oldest inhabitants; a fair degree of civilization had reached Indiana when I was born, yet, in my childhood I was accustomed to Indians at the door, to wild turkeys, wild cats and bear and deer in the woods not farther than Michigan from my home. We used to see wild pigeons in such numbers as to break down the branches of the beech, maple and linden trees on which they perched at night.

I was born at a period when, almost daily, huge wagons lumbered down our road, many of them drawn by oxen plodding a few miles each day on the way westward. The plains were covered with buffalo. We used the skins for sleigh robes and they cost from ten to thirty dollars a piece, depending on the size and condition. There was an abundance of game of every kind, the fish fairly crowded the rivers.

One of the commonest sights of my childhood was the ascending smoke in all directions from the burning of uncounted log heaps. And Oh! the pity of it! Those log heaps consisted of as fine trees as God ever made, felled where they stood and rolled together and burned *to get them out of the way*. Oak, hickory, beech, ash, elms, that almost swept the sky, wild cheery, bird's-eye maple, black wallnut—trees that to-day would be sawed into thin sheets and used for the veneering of less expensive wood; trees for which any lumberman would pay from six to twelve and fifteen hundred a trunk, felled and burned in order to clear the ground upon which they stood for the cultivation of corn and potatoes. The resources of the country were considered so vast that it never occured to any one to select the most valuable of these hardwoods, and store them for the use of future generations.

* * *

I have lived to see timber becoming so scarce that houses of stone, brick, and cement are resorted to through necessity rather than choice in many instances. I have lived to see the greater part of our springs dried up, the little streams drained from the face of the earth, and many of the rivers practically dry in the summer season, the lake levels lowered, the fish, game and fur-bearing animals practically exterminated.

* * *

The deer and fur-bearing animals are practically gone from the country I knew and the country further west as well. Many of the Indians are nearly starving through the scarcity of fish and game. The birds have been depleted in numbers until it is quite impossible to raise fruit

of any kind without a continuous fight against slug and aphis, a war which birds in sufficient numbers would wage for us.

* * *

With the cutting of our timber has come a change in our climate; weeks of drought in summer and destructive cyclonic windstorms, winters alternating from a condition so open as to freeze prematurely forced fruit and grain, and winters so stringently cold that the fruit trees are killed outright.

The even temperature and the rains every three or four days which we knew in childhood are things of the past. Summer in these days means to scorch for weeks at a stretch with unalleviated heat; and in the same state in which I was born, it has become necessary for the sons of the men who wasted the woods and waters to put in overhead sprinkling systems in order to grow their garden vegetables while windmills and irrigation are becoming common.

In my childhood my father planted grain with the same certainty of having a full crop, that he had of having alternate day and night. To-day the farmer on my land has no more idea whether he will get a paying yield from the wheat, corn and potatoes that he puts into the ground than he has as to whether the next cyclone will blow his house into the lake or pass a few yards on the other side of it. We, as a nation, have already, in the most wanton and reckless waste the world has ever known, changed our climatic conditions and wasted a good part of our splendid heritage. The question now facing us is whether we shall do all that lies in our power to save comfortable living conditions for ourselves and the spots of natural beauty that remain for our children.

If this is to be done, a nation-wide movement must be begun immediately. Our climate could be greatly bettered if every man owning land would do what he can to restore original conditions by fighting to save the water in his vicinity, and by planting all the trees for which he can possibly spare space. *More water means more rain.* A heavier growth of timber breaks up culminative winds and gives bird life, under rigorous protection, a chance to renew itself. Wherever there are plenty of birds the spraying and fighting of insect pests is not necessary.

The above warning applies with even greater force to Canada, for small as the remaining supply of timber in the United States now is, the stand in Canada amounts to less than one third of the supply in that country.—F. J. D. Barnjum.

WHAT IS A "HARDWOOD" TREE?

From time to time there comes up to wood users of all description (that is, to practically everyone) the question as to what constitutes a "hardwood" tree as distinguished from a "softwood" tree. Can we call the poplar a "hardwood" when its wood is so soft? And, conversely, can we speak of hard pine as a "softwood" when its wood is so much harder than that of the poplar?

This is a case where a term, apparently quite definite, has acquired an altered meaning in use. A "hardwood" tree is not necessarily a tree whose wood is hard, nor is every tree whose wood is hard a "hardwood" tree. Poplar, basswood, and tulip, or "whitewood," for instance, are all termed "hardwoods'" although their wood is comparatively soft; and, on the other hand, hard pine and yew belong with the "softwoods," although their wood is much harder than that of the "hardwoods" just mentioned.

The usage prevailing in the forest services both federal and provincial in Canada (and the same may be said of those of the United States) is to apply the term "hardwood" to a tree that bears leaves, such as the maple, oak, and ash, as distinguished from those trees having needle-like foliage, such as the pine and spruce, or scale-like foliage, such as the cedar, which are termed "softwoods".

These latter are often described as "evergreens," though the tamarack, which is a softwood, sheds its foliage in the autumn, and the madrona in British Columbia, which is a hardwood, keeps its foliage all winter. Nor is the term "conifer" or cone-bearing tree, altogether satisfactory; the fruit of the yew (another softwood) has the external appearance of a berry. The botanical terms "Angiosperm" and "Gymnosperm" (as applied to trees), could they be popularized, would clearly define the groups of "hardwoods" and "softwoods" respectively.

In the ten counties in Ontario the work of clearing has been so thoroughly done that only five per cent or less of the area remains under forest. In one case, indeed (that of Peel county) the area has been reduced to three per cent. In thirty counties the area in forest is only ten per cent less. In the continental Europe the proportion is far greater, even in the most densely populated countries. France, for example, has nineteen per cent of her area in forest, and Belgium seventeen per cent.

IDENTIFICATION OF PULP WOODS

Spruce, hemlock, balsam fir, tamarack, and jack pine are the five principal softwoods used for pulp in the Lake States, Northeastern States, and Southeastern Canada. These woods differ considerably in price, quality, and pulping properties; and the wood pulp manufacturer often finds it desirable to examine his wood in the log or bolt form before buying or cooking it to insure himself that the species are not mixed. The following key, prepared by the Forest Products Laboratory of the U. S. Forest Service, Madison, Wisconsin, gives the distinguishing characteristics which are most obvious to the unaided eye.

I. Exudations of resin, pitch pockets, and pitch streaks common in the wood. (This does not refer to the bark.)
   - A. Heartwood white and same color as sapwood; odor not pronounced; bark thin and scaly ...SPRUCE.
   - B. Heartwood distinctly darker than sapwood.
     1. Sapwood mostly less than 1 inch wide; heartwood russet brown; odor not pronounced; exudations of resin scant; bark light reddish brown, thin scaly, not ridged ....TAMARACK.
     2. Sapwood mostly over 1 inch thick, heartwood reddish brown; odor of wood like pine pitch; exudations of resin usually abundant; bark dark, thick and ridged, especially at butt — JACK PINE.

II. Exudations of resin, pitch pockets, pitch streaks, and pitchy odor absent. Heartwood and sapwood of about the same color.
   - A. Heartwood white and same color as sapwood; odor ally ridged and scaly except on very small stems, without resin blisters .....HEMLOCK.
   - B. Wood white; bark usually thin, fairly smooth, with resin blisters .....BALSAM FIR.

SEES THE OTHER SIDE, TOO

The Quebec Telegraph has the following comment on the proposed pulpwood embargo

The proposed embargo upon the export of pulpwood is a matter concerning which there is so much to be said both for and against that it calls for the most serious consideration of the Government before arriving at a definite decision. The Telegraph has always stood and still stands, in the interests of our industrial workers, for the manufacture in Canada of the finished product from all our raw material. It is this policy which has built up the great pulp and paper industry of Canada, and the Telegraph has urged an adoption of the same policy in regard to asbestos and other natural products. But there are other things, too, to be taken into consideration in this connection. The question has been raised for instance of privately owned timberlands. One correspondent puts it in the following forcible terms: "Let us suppose that I am the owner in fee-simple of timber lands for which I have paid a good price, for the sole purpose of establishing a business of exporting pulpwood, or of selling in the open market to the highest bidder. I have installed necessary plant and equipment to recover the timber and built a rossing mill to bark and prepare the wood for the pulpmill. Just then the Government steps in and says: "You cannot do it; if you wish to make use of your timber you must sell it to Canadian mills only or erect a paper mill yourself." But I have no money to build a paper mill, and, as most of the Canadian mills have their own leased or owned lands, they will buy my wood only when their own cut runs short, or my price is so cheap that they are getting my wood for less than the cost of making their own. My timber thus becomes worth practically nothing to me, and the Crown, having sold me the title to standing timber and pocketed the money, or taken the equivalent in land exchange, now steps in and prohibits the operation of my property to my own best advantage on the plea that somebody, sometime, may get employment in a paper mill built on the strength of my timber. Meanwhile, along with my employees of the bush and rossing mill, I may look up another job or go to the poorhouse." Then again it has been asked what would become of our textile industry or of our demands for anthracite coal, if the policy suggested for us in the matter of lumber should be applied against us in the matter of these other raw materials by the United States. These are all subjects that demand the most careful consideration on the part of the Government.

FOREST FIRES

The season of forest fire danger is approaching and the forest services, federal and provincial and forest protective associations are making preparations to combat this great destroyer of forest wealth. Everything that modern science has devised will be used in the campaign—patrols, lookout stations, telephones, telegraphs and heliographs, portable pumps, gasolene trucks, power boats, railway speeders, and aeroplanes. These are all valuable aids but the great engine for fighting forest fires is public opinion.

Nearly all forest fires are caused by human carelessness, therefore when public opinion sets itself solidly against this carelessness, and holds it to be a crime against the nation, a large part of the cause of fires will disappear. Patriotic citizens can do a great service for Canada by being scrupulously careful with their own use of fire when in the woods and by helping to build up, whether they live in the city or the country, a body of public opinion about fires which will deter the careless and strengthen the hands of those who protect the forests.

BOOKS FOR FORESTERS

Paper Technology. An elementary manual on the manufacture, physical qualities and chemical constituents of paper and papermaking fibers. By. R. W. SINDALL. Third edition. Completely revised and rewritten. xvi, 337 pp., 144 plates, 202 illus. Med. 8vo. 1920. London: Charles Griffin and Co., Ltd. 21 s. net.

This well known work, which was first published in 1906, and has now reached its third edition, gives a useful, instructive and well-arranged account of the manufacture and properties of pulp and paper of various kinds. The physical and chemical character of the raw materials and the finished paper are described, and methods of analysis, and investigation are carefully and fully detailed. In addition, the book contains a chapter on the history, chronology and statistics of paper making and on the customs of the paper trade in the different countries, and useful glossaries of the technical terms used in connection with the raw materials and those applied to papers of various descriptions. The chief changes introduced in the new edition are to be in the section devoted to the examination and analysis of the finished product. — Bull. Imp. Inst. Apr. - June, 1920.

A Manual of the Timbers of the World, their Characteristics and Uses. By Alexander L. Howard. To which is appended an account by S. FitzGerald of the Artificial Seasoning of Timber. xvi, 446 pp., 8 vo. London: MacMillan and Co., 1920. 30 s. net.

In his preface Howard modestly disclaims any intention of superseding previous works, and he has certainly carried out very completely his expressed purpose of supplementing them. After a brief introduction on the national importance of timber, which opens with an impressive appeal for respect to growing trees, taken from the Portuguese, three-fourths of the book is occupied with an alphabetical descriptive catalog of the timbers of the world. This comprises some 450 woods, with their scientific names, countries of origin, weight per cubic foot "when dry", brief histological description and uses. All the woods in the British trade are included, together with Brazilian, Philippine, Formosan, Guianan and other kinds as yet hardly heard of here. A more complete review may be found in ("The Bulletin of the Imperial Institute"), Apr. - June, 1920, page 311.

KRAFT TO BE MADE IN JAPAN

Owing to various shortcomings and causes kraft wrapping paper is not being manufactured in Japan. The demand is only met with imported goods or with an imitation made there.

The Fuji Paper Mill, the second largest in Japan, together with its allied company, the Karafuto Industrial Company have just succeeded in producing kraft after considerable experiments and expenses. The necessary plants are now located at Ochiai, Saghalien by the Karafuto Industrial Co. and at Otomari, Saghalien by the Fuji Mill on account of its raw materials sources. They have installed each one machine and will turn out 6,000 tons to 10,000 tons annually. When these Companies offer this paper to the market, the imports will be greatly affected, if not checked, and any surplus besides the domestic consumption will be exported to China and to the eastern markets as well.

Technical Section

REVIEW OF RECENT LITERATURE

DYEING

A-13 The Manufacture of Lake Colors. H. H. Holden, **Paper Trade J.** 76, No. 15, 175, 177 (Apr. 12, 1923); **Paper Mill** 47, No. 15, 210 (Apr. 14, 1923); **Paper Ind.** 5, 160-161 (April 1923); **Paper** 31, No. 26, 126, 128 (Apr. 18, 1923). Brief description of the manufacture of red, yellow, blue, green and black lakes, with an enumeration of their merits for paper making. — A. P.-C.

A-13 Coloring Matters For Coated Paper. Norman Clark. **Paper Trade J.** 76, No. 15, 177, 179 (Apr. 12, 1923); **Paper Ind.** 5, 155-156 (Apr. 1923); **Paper Mill** 47, No. 15, 96, 98 (Apr. 14, 1923); **Paper** 31, No. 26, 57-60 (Apr. 18, 1923). A brief outline of the properties of basic, acid, direct, and special dyes, color lakes, pigments, and metals (for foil papers) from the standpoint of coated paper manufacture, together with a brief description of the methods of handling these coloring matters. A. P.-C.

A-13 Criticism of Ostwald's Color Theory. W. B. VanArsdel. **Paper** 31, No. 26,113-116 (Apr. 18. 1923). From a discussion of the Ostwald color theory from theoretical and practical standpoints, the author concludes that the theory has not met with the assent of those who are competent to judge it among other color theories, although parts of it seem to be valuable contributions to knowledge, and that the Ostwald methods of color measurement should be regarded by those who use them as only approximate. No process of technical colorimetry which is free from practical objections has yet appeared; but there is no warrant for adding to these practical difficulties the haziness of meaning due to an unsound theory. — A. P.-C.

A-14 The Work Of The Freight Container Bureau. Paper Trade J. 76, No. 11, 48-49 (Mar. 15, 1923). Tentative specifications are given for interior packing and preparation of refrigerators for crating, and for solid fiber and plyboard boxes for boots and shoes. — A. P.-C.

K-8 R-11 Investigation of Problems in Coloring in the Paper Mill Laboratory. Walter C. Holmes. **Paper Trade J.** 76, No. 6, 45-46 (Feb. 8, 1923). A discussion of the advisability of each paper manufacturer investigating his own color problems, and finding the solution best fitted to his own particular requirements, rather than depending on the work of the dye manufacturer who can devote only superficial attention to the problems of the individual paper manufacturer. — A. P.-C.

K-8 The Coloring of Paper. Andre Beltzer. **Industrie Chimique** 10, 106-109 (Mar. 1923). The author suggests that paper mills should equip themselves to manufacture their own dyes, and discusses the benefits to be derived therefrom. — A. P.-C.

DRYING

K-12 Temperature Equalizer For Paper Machine Driers. .Geo. S. Witham, Jr. U.S. pat. 1, 438, 511, Dec. 12, 1922. Blasts of hot air are provided at various points between the web-forming mechanism and the calenders for maintaining approximately uniform temperature on both sides of the web as it passes through the machine, instead of having each side alternately dry and hot when in contact with the drier drums and then moist and cool when in contact with the felt. — A. P.-C.

K-12 A New Vapor Circulator For Paper Machine Driers. Paper Ind. 7, 1537, 1539 (Feb. 1923). A description of the Fulton system. — A. P.-C.

K-12 The Woodsome System Of Paper Drying. Paper Trade J. 76, No. 1, 54-59 (Jan. 4, 1923). After outlining a basis for measuring the performance of drying systems, the author describes the Woodsome system (protected by U. S. pat. 1,428,198, Sept. 5, 1922, and Can. pat. 221,536, Aug. 1, 1922). See **Pulp & Paper** 20, 769 (Sept. 7, 1922). — A. P.-C.

K-12 Drying More and Better Paper With Less Fuel. F. C. Farnsworth. **Paper Mill** 47, No. 12, 12,14, 46, 48 (Mar. 24, 1923). A discussion of the merits of the Farnsworth drying system. **Pulp & Paper** 19, 794 (July 28, 1921); **Paper Trade J.** 73, No. 2, 52 (July 14, 1921). — A. P.-C.

K-12 Dryer For Paper Machines. F. P. Reed assignor to C. C. Orcutt. U. S. pat. 1,432,735, Oct. 17, 1922; Can. pat. 227,489, Dec. 26, 1922. The paper web is supported on a wire cloth and passed over a series of drying units, each of which consists of an open top box-like casing containing electric heating elements. The web is kept under tension to ensure uniform drying without warping or bending. — A. P.-C.

K-12 Drier For Paper Machine. T. F. Pinder assignor to C. C. Orcutt. U. S pat. 1, 432,729, Oct. 17, 1922; Can. pat. 228,423, Jan. 30, 1923. The paper from the wet end of the machine passes into a chamber containing steam heating elements placed above and below, but not in contact with the web. Warm dry air is passed through the chamber in opposite direction to the paper. On leaving the chamber the paper passes through a pair of press rolls and through a series of finishing rolls. It then similarly goes through one or more exactly similar chambers. It then passes to a second section, similar in all respects to the first, except that it is equipped with electric instead of steam heated elements. A heat exchanger is provided for heating the dry air by means of the moist air exhaust from the drying chamber.— A. P.-C.

K-12 Drier For Marbled Paper. F. P. Reed assignor to C. C. Orcutt. U. S. pat. 1,432,731, Oct 17, 1922; Can. pat. 229,222, Feb,27, 1923. The drier consists of an open top casing in which are electrically heated elements and over which the paper web is passed supported on a wire cloth. A suction nozzle is arranged below the web for collecting and removing the vapor formed. — A. P.-C.

K-12 Drier F. P. Reed, and C. Nelson assignors to American Coated Paper Co. Can. pat. 229,121, Feb. 27, 1923. Each drier unit comprises a casing having means for supporting and guiding the web. Heating means are provided both above and below the web, and dry air is circulated continuously at both surfaces of the web. The units are so arranged that the temperature of the web is raised gradually, to eliminate surface drying and to permit removal of the vapor as it forms. The heating of the initial unit is provided for by waste heat from the succeeding units. The web may be made to follow a zig-zag path in one or more sections to insure sufficient drying. — A. P.-C.

K-12 Contribution To The Study Of Drying. R. Isnard. **Papier** 26, 217-224 (Feb.1923). An analysis of the heat losses at the driers of a paper machine (through the felt, by radiation, convection, condensation and at the traps), with suggestions for eliminating, or at least appreciably reducing them. The author concludes that the most efficient remedy is a properly designed ventilating system, by means of hot air; and he suggests that the air be advantageously heated by means of the flue gases from the boilers. — A. P.-C.

K-12 Drier For Paper. F. N. Vaccaro. Eng. pat. 177,307, Jan. 19, 1921. An electrically heated drying chamber, especially suitable for drying material in sheet form is divided into a lower and an upper compartment by a partition which leaves communicating passages at each end to permit free circulation of air from one compartment into the other. The lower compartment, through which the wet sheet travels, is provided at the botton with a number of heating elements, mounted on a heat reflecting plate, and so arranged that the distribution of heat on to the sheet can be varied at will; the heating elements are designed to be used with any type of current. The upper compartment contains moisture absorbent materials. Continuous circulation of air is effected by raising that end of the drying chamber at which the wet sheet enters; this causes the warm air in the lower compartment to flow in the opposite direction to that followed by the sheet, and then to pass into the upper compartment, where it is dried, during which operation it becomes sufficiently cooled to flow through the upper compartment back into the lower one, thus making a complete circuit through the apparatus. The part of the air most heavily laden with moisture remains close to the surface of the travelling sheet and passes with it out of the drying chamber. Drying may be immediately arrested, if so desired, by opening a number of doors fitted in the sides of the chamber. — A. P.-C.

K-12 Drying Of Felts And Paper On The Paper Machine. J. M. Voith, Ger. pat. 375,258, **Papierfabr.** 21, 264 (May 13, 1923). Instead of drying felts on cylinders in the usual way, they are passed around air heaters. The latter heat air which is blown against the paper sheet between the drying cylinders on the machine. — J. L. P.

K-12 Removal Of Water From The Paper Sheet On The Machine Wire. Otto Schmidt. Ger. pat. 374,750 **Wochbl. Papierfabr.** 54, 1371 (May 19, 1923). Suction rolls are so arranged as to remove the water from both surfaces of the sheet on the longitudinal paper machine wire. — J. L. P.

K-12 Process For Drying Paper. Ogden Minton. Ger. pat. 370,260. **Papielfabr.** 21, 199 (Apr. 8, 1923). The sheet is passed through a heated bath of mercury into a chamber, in which air pressure is reduced, and out through a bath of hot mercury. — J. L. P.

K-12 Electrically Heated Rolls, Especially Calender Rolls. Siemens Elektrowarme Gesellschaft. Ger. pat. 373,085. **Papierfabr.** 21, 226 (Apr. 29, 1923). The heating unit is located near and outside of the surface of the roll. — J. L. P.

K-18 Production Of Paper Board, Etc. Ger. pat. 364,565. **Wochbl. Papierfabr.** 54, 617 (Mar. 3, 1923). The fibrous mass, before converting to stock, is subjected while dry to a disintegrating and loosening treatment. — J. L. P.

K-18 Process Of Making Fiber Board. J. C. Peabody. U. S. pat. 1376,353, Apr. 26, 1921. A stock is prepared by adding alkaline cellulose thiocarbonate, glue, casein, viscose, or other colloidal or cementitious substance to a mass of fibres mixed with water, and this stock is diluted with water to which has been added such a quantity of the colloidal substance that the concentration of the latter is maintained practically constant. Sheets of paper or boards are then formed from the diluted pulp in the usual manner. — A. P.-C.

K-18. Fiber Board. M. Chew. Eng. pat. 178,155, Nov. 12, 1920. Chip waste is steamed, mixed with water, beaten in a ball mill or other beater to a fibrous, watery, pulpy mass, the fibers of which are unbroken but shredded, and then formed into a board and waterproofed. A binder such as talc, alone or mixed with ground asbestos, or soda ash, may be used, and hair or the like may also be added. The dried board is waterproofed by means of a mixture of calcium acetate and aluminum sulphate. — A. P.-C.

K-18. Manufacture of Millboard from Tanyard Refuse. A. T. Masterman. Eng. pat. 182,884, Apr. 6, 1921. Waste wattle bark or other tanyard refuse is crushed for 20 to 30 minutes in an edge runner in the presence of a solution of sodium carbonate or other alkali, and then, after admixture with about 20 to 30 per cent. of waste paper pulp, is beaten for about 2 hours with water at 45 to 50 deg. C. Engine size and alum, or gelatin alone, are added to the pulp during the beating process, and after leaving the beater the pulp is manufactured into board by ordinary processes. — A. P.-C.

K-19 K-23 Drying and Conditioning Of Coated and Other Papers. J. O. Ross. **Paper Trade J.** 76, No. 15, 171-174 (Apr. 12, 1923); **Paper Ind.** 5, 110-114 (Apr. 1923); **Paper** 31, No. 26, 104-109 (Apr. 18, 1923); **Paper Mill** 47, No. 15, 86-94 (Apr. 14, 1923); An outline of the development of the drying and conditioning process for coated, wall, waterproof, glazed, gummed, and sand papers, showing particularly the importance of proper conditioning of coated papers to prevent "change of register" in the printing room. — A. P.-C.

K-19 Preparation Of Paper For Coating. Associated Paper Mills Ltd. Fr. pat. 549,961. A completely finished web of paper (glazed or unglazed) is applied to a second web while the latter is still moist, and the two are united by passing through a suitable press and then drying. The tendency to curl is counteracted by applying the coating on the face that will tend to make the paper curl in the opposite direction. Two finished webs can be used, one of them being moistened before applying to the other. — A. P.-C.

(Continued on page 758)

PULP AND PAPER NEWS

The Federal Government has received tenders for harbor dredging and the construction of piers at Matane, P. Q. The object of the work is to develop the port in order that pulpwood from the Gaspe Peninsula may be shipped from Matane instead of being sent by rail to Levis, P. Q.

Mr. Rex B. Hovey of the technical staff of the Abitibi Company was in Montreal last week.

Mr. Frank W. Clarke, president and general manager of the Gulf Pulp & Paper Company paid a visit to Montreal last week. Mr. Clarke will leave in a few days for England.

The Great Lakes Pulp & Paper Company are calling for tenders for some of the equipment for the proposed mill. It is reported that the company will instal a 234 in. newsprint machine.

Mr. R. S. Kellogg, secretary of the News Print Service Bureau, with Mrs. Kellogg, is on an extended tour of inspection of the mills in Eastern Canada and Newfoundland. He is motoring to the various points. The program includes visits to Sherbrooke, East Angus, Three Rivers, Donnacona, Quebec, Kenogami and places in New Brunswick. From there he will go to Newfoundland and in order to inspect the new developments in the newsprint industry there.

The lumbermen of Montreal will hold a golf tournament on Wednesday, August 15 at the Beaconsfield Golf Club, Point Claire. The competition is open to the entire lumber industry of Montreal, irrespective of the section of the trade to which they belong. Four cups have been offered, three for the best net scores and the fourth for the best gross score. The arrangements are in the hands of a committee of which F. H. Devenish, B 32 Board of Trade, Montreal is the secretary. The competition will be followed by a luncheon.

A. P. Costigane, secretary-engineer of the Ontario Pulp and Paper Makers' Safety Association, has returned to Toronto after a visit of inspection to the following plants: Fort Francis Pulp and Paper Company, Fort Francis; Keewatin Lumber Company, Kenora; Dryden Pulp and Paper Company, Dryden; Fort William Paper Company; Thunder Bay Pulp and Paper Company, and the Provincial Mills at Port Arthur. In conversation with the Pulp and Paper Magazine of Canada, Mr. Costigane said that operations were being carried on in all of the mills visited. In some cases radical changes and improvements are being made which should tend greatly to a reduction of accidents. The extensions and alterations in the Provincial Paper Company's mill at Port Arthur and at the plant of the Fort William Paper Company are along most modern lines, he said, and care has been taken to safeguard machinery as far as possible before putting it into operation. "On the whole accident prevention among the mills in Northern Ontario is a very live issue and is receiving support from both management and employees," said Mr. Costigane.

H. Humphreys, Secretary-Treasurer of the Dryden Paper Co., Limited, Dryden, Ont., has issued a statement referring to the recent sale of the Trout-Chapleau pulpwood limits, refuting the statement that appeared in the public press to the effect that "according to the department the primary object of the transaction is to establish for the first time in Ontario's history a kraft paper making industry". Mr. Humphreys points out that his company has been manufacturing kraft pulp continuously for the past ten years. Since 1918 the company has also been supplying a large tonnage of kraft paper to the West, and has built up a considerable export business of this line of paper to New Zealand and other parts of the world. The manufacture of kraft paper and pulp is no new venture in Ontario's paper making industries.

For the third successive summer the Extension Department of the University of Toronto is holding a short course in journalism. The course will begin at the University on August 13 and will continue for a week. It consists of 25 lectures, some on technical and some on cultural subjects given by the University staff and prominent newspapermen.

W. P. Bennett, President of the Rudd Paper Box Company, Limited, Richmond Street, Toronto, has returned from an extended trip through to California and returning via Western Canada. The trip through Canada was of a business character, Mr. Bennett calling on the paper box making trade from the coast east. He reports business conditions throughout the West in the container line as promising and he was deeply impressed by the outlook for trade in the West generally.

Walter Crainston, of Stokes & Smith Co., Philadelphia, manufacturers of paper box making machinery, was a caller on the trade in Toronto last week.

The St. Thomas Paper Box Company, Limited, St. Thomas, is the latest member to be enrolled on the books of the Canadian Paper Box Manufacturers' Association.

It is interesting to note in connection with the agitation for better forest fire protection measures that the Abitibi Power and Paper Company, Ltd., has had an efficient fire service in operation all spring and summer, and it is likely that other companies will follow suit in this respect. The company's woodmen supplement the Government's fire service throughout the limits, and especially along the railway tracks, where the danger of fire is the greatest. The company's fire rangers, in fact, are under strict written orders to take their instructions from the Government rangers in case a fire breaks out, and supply them with all available equipment. In such an event the company rangers, the pumps, tanks and all other appliances would be automatically under the orders of the Government rangers in charge. Among the company's precautions against fire is a tank car with a capacity of 7,000 gallons and 2,000 feet of hose. There is also a pump with a capacity of 55 gallons per minute that goes along the line. Additional hose can be loaded on a speeder and sent to any place on the line. From a look-out tower, fifty feet high, situated on the top of a rocky hill, a view can be secured of the surrounding country in every direction for a distance of twenty miles. A pair of the very finest field glasses is at this point for the use of the rangers. Both of the company's rangers carry chemical fire extinguishers on their cars. Large signs

in French and English at various points warn strangers of the danger of fire and how to avoid such a contingency.

R. W. McLellan, of Fredericton, N. B., Secretary of the New Brunswick Lumbermen's Association, is being freely mentioned as a likely man to form one of the Royal Commission to be appointed by the Dominion Government to enquire into the pulpwood situation preliminary to a definite decision as to whether or not to put an embargo on pulpwood going from Canada to the United States. Mr. McLellan for a number of years has been actively associated with the pulpwood and lumber industries and is considered to be familiar with the situation in Canada. Several leading lumbermen and pulpwood men in the Dominion have endorsed the idea that he be a member of the commission.

H. G. French, of the Allan Paper Company, Simcoe Street, Toronto, was appointed Grand Senior Warden of the Grand Lodge of Canada at the meeting in Toronto last week of the Masonic Grand Lodge.

H. J. Shanley, Jr., of the Chemical Paper Manufacturing Company, Holyoke, Mass., was a business visitor in Toronto last week.

George Allan, of the Buntin Reid Company, Limited, Toronto, has returned after an enjoyable outing in Northern Ontario where his piscatorial skill resulted in the landing of some nice catches.

Percy B. Macguire, city salesman at Toronto for the Provincial Paper Mills, Limited, is spending a few days at Orchard Point Inn, Atherley, Ont.

The death took place in Toronto last week of Rev. Peter Moerdyke, father-in-law of S. F. Duncan, secretary of the Provincial Paper Mills, Limited. Mr. Duncan accompanied the remains to South Bend, Indiana, where interment took place.

JOHN F. CARROLL GIVEN SEND OFF

Port Alice, July 10. — The residents of Port Alice held a farewell social on the above date as a send off to Mr. John F. Carroll who has been resident manager for the Whalen Pulp and Paper Mills Limited at the Port Alice Plant during the past eighteen months.

The entertainment consisted of dancing, songs and recitations which were enjoyed by all. Among those who sang were Mrs. MacRae, Mr. C. Mills, Mr. P. C. McGhee, Mr. Watson, and Mr. Stuart, and Mrs. Millard gave some pleasing recitations.

In the course of the evening a speech was made by Mr. J. J. Needham in which he thanked Mr. Carroll on behalf of the community for his many kindnesses and the interest he had displayed in the welfare of Port Alice during his residence here. Mr. Carroll, in reply thanked the citizens of Port Alice for their co-operation during his residence and stated that his success as resident manager was due more than anything to the loyal support of the Port Alice employees. Mr. Carroll was presented with a fine club bag by the heads of departments in token of their esteem and during the past week he was also presented with an engraved silver shield by the school children of the town with whom he has always been a great favorite.

Mr. Carroll is leaving Port Alice to take charge as general manager of a two hundred and fifty tons mill in Michigan, in which he is interested.

Light obeyed increaseth light; light resisted bringeth night.

CANADIAN EXPORTS OF PULP AND PAPER SHOWED LARGE INCREASE IN JUNE

A report issued by the Canadian Pulp and Paper Association shows that exports of pulp and paper in June were valued at $12,368,456. This is an increase of $809,772 over the previous month, and is the second highest total for the year.

The values of the various items exported were as under:

	June, 1922 cwts.	June, 1922 Value.	June, 1923 cwts.	June, 1923 Value.
PAPER				
Newsprint	1,729,585	$6,136,649	1,857,049	$7,006,722
Book paper	1,214	7,564	7,981	53,150
Other paper & Mfrs.	.....	613,311	.....	799,812
		$6,757,524		$7,859,584
PULP				
Sulphate	262,175	$ 801,395	245,409	$ 823,847
Sulphite, bleached	238,375	920,652	272,561	1,167,411
Sulphite, unbleached	430,016	1,086,909	466,468	1,239,910
Mechanical	751,121	968,396	795,520	1,277,604
	1,681,687	$3,777,352	1,779,958	$4,508,772

Exports of newsprint last month were greater than in June, 1922, by 127,464 cwts. Book paper showed a big increase, and total pulp exports were greater by 98,271 cwts.

The exports in June were distributed as follows:

	Paper.	Pulp.	Total.
U. S. A.	$6,998,665	$3,052,959	$10,051,624
United Kingdom	210,703	999,034	1,209,727
All other	650,316	456,779	1,107,095
	$7,859,684	$4,508,772	$12,368,456

The figures for the first three months of the current fiscal year show a considerable improvement over those for the corresponding three months in 1922. For April, May and June of this year the total pulp and paper exports were valued at $33,324,612, as compared with a total of $25,548,065 for the corresponding three months of 1922.

For the three months' periods the figures were as follows:

	Three months 1922 cwts.	Three months 1922 Value.	Three months 1923 cwts.	Three months 1923 Value.
PAPER				
Newsprnit	4,474,288	$15,869,712	5,404,626	$20,321,885
Book paper	1,811	12,668	13,438	89,911
Other paper	.....	1,346,876	.....	1,904,626
		$17,229,256		$22,315,422
PULP				
Sulphate	676,913	$2,076,515	671,279	$2,205,797
Sulphite, bleached	651,180	2,562,802	796,986	3,486,552
Sulphite, unbleached	821,899	2,134,053	1,100,865	2,998,681
Mechanical	1,205,197	1,545,439	1,445,753	2,318,160
	3,355,189	$6,318,809	4,014,883	$11,009,190

Canadian exports of pulpwood in these three months amount to 385,511 cords, valued at $3,524,447, compared with 200,675 cords valued at $2,031,786 in the corresponding three months of 1922.

Estimated Swedish pulp shipments to all countries for 1923 total 533,200 long tons, as against 651,000 tons in 1922. Of the latter amount, 205,500 tons were sent to the United States and 1923 shipments to the United States to June 8 were 103,800 tons.

When a man reaps the whirlwind, he is always astonished at the crop.

Give a lie a day's start, and truth will have to chase it round the world.

K-19 Manufacture Of Glazed Paper From Unglazed Or Slightly Glazed Paper. Associated Paper Mills, Ltd. Fr. pat. 549,960. Coating composition is applied to the unglazed paper, which is heated either before, during, or after application of the coat so as to facilitate penetration of the adhesive into the body of the paper, leaving just enough at the surface of the paper to hold the coating material. The other side is then glazed in any suitable manner. — A. P.-C.

K-20 Apparatus For The Manufacture Of Parchment Paper. N. Nakamura. Jpn. pat. 38,110, Feb. 26, 1921. Sulphuric acid is sprayed from vertical parallel pipes on both sides of the paper, which is then washed with water and passed through 5° Be. caustic soda solution. — A. P.-C.

K-20 Parchmentizing And Impregnating Paper With Phenol Condensation Products. H. C. P. Weber assignor to Metropolitan Vickers Electrical Co. Eng. pat. 169,451, Sept. 22, 1921. The paper is parchmentized by treating with caustic soda, sodium zincate, and other suitable substance, and is then impregnated successively or simultaneously, and before or after removal of the parchmentizing agent, with a phenol and formaldehyde and subjected to heat and pressure, whereby a condensation product intimately incorporated with the fibers is obtained. Alternatively, the fibrous material is parchmentized and impregnated at the same time with a mixture containing the parchmentizing substance, phenol, and formaldehyde. For example, the paper is continuously passed through a parchmentizing bath containing 20% caustic soda (10 to 15% sodium chloride is added to prevent excessive shrinkage), then in succession through a bath containing phenol and a chamber containing formaldhyde vapor and between hot rollers under pressure. It is afterwards washed and dried. — A. P.-C.

K-20 Parchmentized Or Vulcanized Paper. B. Herstein. U. S. pat. 1,429,427, Sept. 19, 1922. Sheets are formed of layers of paper the cellulose of which is nitrated to contain not in excess of 4.5% nitrogen, cemented together by superficial gelatinization induced by treating the weekly nitrated paper with an alkali, e.g., caustic soda. — A. P.-C.

K-21 Manufacture of Roofing Felt. H. Wade and Barrett Co. Eng. pat. 166,886, July, 7, 1921. Addition to 165,240. The process described in the chief patent is modified, whereby the sheets consisting of mixed watery pulp and comminuted bituminous water-proofing materials are subjected, at a temperature exceeding the softening point of the bituminous material, to a pressure sufficient to reduce their volume by one-half. —A. P.-C.

K-21. Saturating Sheets with Bituminous Material. L. Kirschbraun. U. S. pat. 1,417,841, May 30, 1922. A hot bituminous composition is applied in liquid form to one face of a hot dry sheet as it is being wound in a roll. — A. P.-C.

K-21 Waterproofed Fiber Board. L. Kirschbraun. U. S. Pat. 1,417,836, May 30, 1922. Several plies of fiber board are saturated with a waterproofing composition and united to one another with Portland or magnesite cement or other adhesive material. A granular facing material such as gravel may be applied to the exposed surface of the built-up sheet to adapt it for use as roofing.—A. P.-C.

K-22. Colored Tissue Paper. F. M. Shuler assignor to A. E. Dubey, U. S. pat. 1,428,064, Sept. 5, 1922. Tissue paper is coated on opposite sides with sizing of different colors which is heated to effect immediate setting. — A. P.-C.

K-23 Method of Making Emulsions. L. Kirchbraun. U. S. pat. 1,417,835, May 30, 1922. A bulk supply of emulsion is formed by making a mixture of water and colloidal clay, adding a waterproof adhesive binder, and thoroughly mixing into an emulsion in which the binder forms the internal phase and the water and emulsifying agent the external phase. Further quantities of water and colloidal clay and of binder are separately fed into the bulk supply, the latter being agitated while forming the emulsion. — A. P.-C.

K-23. Process of Making Waterproof Composition. L. Kirschbraun. U. S. pat. 1,417,837, May 30, 1922. Bituminous material in the form of discrete particles is suspended in an aqueous mixture which also contains an oxidizing agent such as driers or sulphur to prepare a composition adapted for waterproofing fiber board. — A. P.-C.

K-23. Colored Bituminous Composition and Process for Making Same. L. Kirschbraun. U. S. pat 1,417,838 May 30, 1922. A yellowish brown pitchy material of conchoidal fracture when cold, adapted for making roofing, is obtained by steam distillation of wax tailings. — A. P.-C.

K-23 Waterproof Sheet Material. L. Kirchbraun. U. S. pat. 1,417,839, May 30, 1922. A colored emulsified matrix is formed from materials such as clay and pitch from petroleum wax tailings mixed with dyes and fibrous materials of a different color from the matrix materials and mottled sheets are formed from the mixture. — A. P.-C.

K-23 Method of Waterproofing Paper. F. Moeller. Eng. pat. 184,462, Aug. 1, 1922. The material is waterproofed by treatment with thionyl chloride or sulphur chloride or dichloride in the atomized state. The liquid may be sprayed in a chamber by a sprayer and thence carried by a pipe to the treating chamber through which the paper is passed. The circulating system contains a drying apparatus for separating sulphurous and hydrochloric acids, and a blower. The paper may be alternatively passed over a porous block saturated with the reagents; or the latter may be applied by porous rollers dipping into the liquid or by rollers sprinkled with it.—A. P.-C.

K-23. Metallized Paper for Making Electric Cables. M. Hochstader. Eng. pat. 186,363, Mar. 29, 1921. Same as Fr. pat. 533,710. See "Pulp and Paper" 20, 658 (Aug. 3, 1922); **Paper Trade** J. 75, No. 7, 57 (Aug. 17, 1922.) — A. P.-C.

K-23, L-4. Composition for Coating and Impregnating Fiber. E. T. Oakes, U. S. pat 1,411,371, Apr. 4, 1922. The composition is prepared by heating tung oil to gelatinize it, subdividing the product and adding solvent naphtha or other liquid which will cause the finely divided particles to swell in suspension. The product is suitable for waterproofing paper receptacles. — A. P.-C.

K-23 Waterproofing Composition. G. A. Richter, W. B. Van Arsdel and D. H. White. U. S. pat. 1,396,527, Nov. 8, 1921. A composition adapted for waterproofing fiber tubes is formed by heating together 25 to 60 parts of gilsonite, 25 to 70 parts of paraffin and 5 to 10 parts of petroleum oil. The mixture melts at 50 to 60 deg. C. — A. P.-C.

K-23. Waterproofing Paper, W. Hoskins. U. S. pat. 1,430,998, Oct. 3, 1922. Insoluble soap, e.g., calcium or zinc stearate or resinate, is sprinkled or dusted on the

surface of paper and all except the adhering particles are then removed. — A. P.-C.

K-23. Asbestos Paper. J. Fox and Turner Bros., Asbestos Co., Ltd. Eng. pat. 166,799, June 17, 1920. Thin asbestos paper suitable for insulating or tape for electric purposes is reinforced with Japanese tissue paper secured thereto by starch, gum, varnish, shellac, size, or the like. — A. P.-C.

K-23. Waterproofing Paper. L. Kirschbraun. U. S. pat. 1,401,791, Dec. 27, 1921. A paper stock which can be felted on a paper machine is formed of fibrous pulp and a waterproofing emulsion which may contain asphalt or coal-tar pitch, clay and water. — A. P.-C.

K-23. Waterproofing Composition for use on Fibrous Material. A. O. Tate. U. S. pat. 1,400,579, Dec. 20, 1921. A waterproofing composition adapted for use on paper is formed of an aluminum soap, albumin, zinc oxide, and carbon tetrachloride of gasoline. — A. P.-C.

K-23 Waterproofing Composition for Paper. J. R. Hyer. U. S. pat. 1,405,220, Jan. 31, 1922. The mixture contains paraffin, rosin and magnesium sulphate. — A. P.-C.

K-23 Insect-Proof and Waterproof Paper. T. Oishi and Ohbakyo Seishi Kabushiki Kaisha. Jpn. pat. 38,-494, Apr. 23, 1921. A mixture of pasty **Hydrosme revieri** (0.4 to 0.7 per cent aqueous solution), $O.2Na_2CO_3$ $NaHCO_3.2H_2O$ and 6 parts of cupric ammonium arginate solution (5 per cent) is painted on strong paper and dried. — A. P.-C.

K-23 Safety Paper For Financial Uses. Georges Fournier. Fr. pat. 548,230. In the last stages of the preparation of the stock, microscopic particles are incorporated with the stock, which will characterize any given run of paper by their nature, number and color. They must not react with the stock nor with any of the ingredients of the paper, must be stable and must not alter the surface of the paper in such a way as to interfere with proper printing. The inventor mentions vegetable spores, dead bacteria, and mineral powders having definite crystal structures, either colored or uncolored, as being particularly suitable. — A. P.-C.

K-23 The Peculiarities Of Photographic Paper. Alfred B. Hitchins. **Paper Mill** 47, No. 15, 218,220 (Apr. 14, 1923); Paper 32, No. 1, 5-6, 21 (Apr. 25, 1923). Brief outline of the requirements of raw photographic stock, and of the results obtained by a large U. S. papermaking firm (not named) in supplying the need caused by interruption of French and German importations during the war. — A. P.-C.

K-23 Uniting Waxed (Paraffin) Paper And Foil E. A. Bradshaw. Can. pat. 227,922, Jan. 1, 1923. The wax paper and foil are taken from separate rolls and brought together over a guide roll into contact with a heated surface (the foil preferably engaging the heated surface). The heat melts the adjacent surface of the paraffin paper which is then immediately brought into contact with a cooling surface so as to harden the melted wax into the surface of the foil. — A. P.-C.

K-23 Waterproofing Pulp. Fritz Moeller. Ger. pat. 370,198. **Zellstoff u. Papier.** 3, 55 (Mar. 1923). The dry fibrous material is exposed to the vapors of thionyl-chloride or sulphur chloride, with the addition of heat if necessary. — J. L. P.

K-23. Oiled Paper. S. Sparks. U. S. pat. 1,444,217, Feb. 6, 1923. Oil is applied to portions only of a strip of paper and the paper is then passed over rollers and wood to permit diffusion and penetration of the oil.— A. P.-C.

K-23. Rendering Paper Transparent. O. Poeppel. U. S. pat. 1,444,082, Feb. 6, 1923. Paper for window envelopes is coated with a lacquer at certain portions and then passed through a heated chamber where the heating and motion of the paper cause impregnation with the lacquer and render the paper transparent. — A. P.-C.

K-23. Moisture-Proof Creped Paper. A. E. Currier. U. S. pat. 1,390,276, Sept. 13, 1921. Paper is brought into contact with a wax block just before being acted on by a creping roll. — A. P.-C.

K-23. Manufacture of Filter Paper. F. E. Thomas and J. Baker Sons and Perkins, Ltd. Eng. pat. 189,562, Sept. 6, 1921. Filter paper, capable of retaining very fine coarsely-dispersed precipitates and colloidal matters, is prepared in the usual manner from pulp incorporated with 5 to 30 per cent. (calculated on the weight of air-dry pulp) or finely ground decolorizing carbon. — A. P.-C.

K-23. Vulcanizing Rubber Latex Paper. F. Kaye. Eng. pat. 191,446, Oct. 8, 1921. Addition to 167,935. A small quantity of a sulphide of an alkali or alkaline-earth metal is added to the rubber latex, e.g., 12 oz. of sodium sulphide to one gallon of latex containing 30 per cent. of rubber. The treated latex is then diluted and added to the beaten pulp in the manner previously described. A suitable quantity of acid or hydrolyzable salt is then added to precipitate the rubber on the fiber and to decompose the dissolved sulphide. The colloidal sulphur thus produced effects the vulcanization of the rubber during the subsequent drying operation. Substances capable of accelerating vulcanization may be introduced into the beaten pulp either before or after the addition of the latex. — A. P.-C.

The Action of the Beater

By Dr. SIGURD SMITH, of United Paper Mills, Denmark

(Translated into English by Major RENOLD MARX, M.C., B.Sc.

Published under the auspices of the Technical Section of the Papermakers' Association of Great Britain and Ireland, 1923.

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UNITED STATES NOTES

The properties and assets of the American Strawboard Company, which had been declared bankrupt in the United States District Court in Chicago, was sold last Thursday to a committee representing various individuals and corporations for $1,588,300. The company operated mills in Circleville, Ohio; Wilmington and Quincy, Ill.; Noblesville, Ind., and Winchester, Va. The estimated value of the properties was $3,500,000.

Tentative plans for the construction of a pulp mill costing about $500,000 to add to the present establishment in Memphis are being considered by the Indiana Board and Filler Company of Vincennes, Ind. John S. Waters, treasurer of the company, was a visitor in Memphis last week for a survey of the Memphis plant and for conference with officials. The plant being operated at present by the Vincennes firm was recently purchased from the Tennessee Fiber Company. It is now manufacturing egg-case fillers. Enlargement of the Memphis plant to include a pulp mill that will manufacture straw and chip board has been decided upon.

The Wall Paper Manufacturers' Association and the National Wall Paper Wholesalers' Association held meetings last week at the Hotel Commodore, New York. Lines of wall paper for the 1924 season were shown in connection with the meetings. The feature of the new lines shown by the thirty-seven manufacturers represented was the great amount of attention given to figured papers in tapestry, damask, engravure and staple combination effects. The main sentiment of the gathering, which took on the air of a convention, was that the stipple or monotone paint or paper vogue is on the decline. The better class homes, it is asserted, are now choosing the figured papers, which for some time have been in the discard. The showings of the new lines were held earlier this year than usual, and jobbers are understood to have agreed to place orders for 25 per cent. of their requirements by August 15. Wholesale prices are said to show a small advance over last year.

Shipments of newsprint from Finland have been held up at Baltimore by the collector of customs there pending an investigation of charges alleging dumping. A general investigation has been ordered by the customs service into alleged dumping of Finnish newsprint on the American market.

Close to 100 stationery firemen in the paper mills of Holyoke, Mass., went on strike last week to enforce demands for a wage increase. The men walked out at the fifteen local divisions of the American Writing Paper Company and independent mills in Mittineague and Woronoco. The mills of the Chemical Paper Company and the Crocker-McElwain Company are not affected as they are paying the scale demanded. Other independent mills, including the American Tissue Mills, Valley Paper Company, Hampshire Paper Company and Carew Paper Company are not affected just now, as negotiations relating to the wage scale demanded are being conducted.

The agents of the Hammermill Paper Company will hold their annual banquet and field day August 23 and 24 at the Kahkwa club, Erie, Pa.

A merger affecting the Union Paper Products Company and the New Orleans Corrugated Fibre Box Company, Inc., both of New Orleans, has just been completed. As a result of the combine a new concern, to be styled the New Orleans Corrugated Box Company, and capitalized at $500,000, will operate at the plant of the Union Company manufacturing boxes and boxboard. The old plant of the Corrugated Fibre Box Company is to close and the buildings will be offered for sale. The officers of the new company are: Sam Ohnstein, president and manager; Harold Levy, vice-president; Jack Levy, secretary; Alexander Lisse, treasurer.

The United States Tariff Commission has ordered a re-hearing, beginning August 13, of the casein tariff question. Coated paper manufacturers of the Kalamazoo Valley and many from other localities will visit Washington to present facts and figures. The Commission desires to give all interested parties a chance to be heard on the question.

Harry Clair, Samuel Clair and Minnie Clair, of Philadelphia, are rapidly developing the business of the Progressive Paper Company, recently organized. The concern specializes in pattern, gum tape, corrugated products and many lines of coarse papers. Harry Clair, the president, was associated for some years with the Saxe Paper Company.

The annual engineering conference of the General Electric Company's paper mill specialists was held at the G. E. works in Schenectady, N. Y., July 10 and 11. The showing of a complete miniature electric steam boiler modelled after the full sized units of the G. E. Company featured the meeting. There was also an exhibit of a complete section of the new G. E. sectional paper machine drive.

Alleging that the rate of 33.5 cents per 100 pounds on newsprint paper from Thorold, Canada, to New York City is unjust, the Tribune Company of Chicago, the News Syndicate Company of New York, and the Ontario Paper Company, of Thorold, Can., have filed a formal complaint with the Interstate Commerce Commission against the Canadian National Railways, the Delaware, Lackawanna & Western, the Erie, the Pennsylvania and other railroad companies, asking for $15,000 reparation on these alleged overcharges.

According to the monthly bulletin of the American Paper and Pulp Association, there are already indications of resumption of activities in the paper industry earlier than usual in the fall. The bulletin says: "The only disturbing factor would be an effort by labor to secure advances as soon as the mills are busy with surplus orders. Paper labor is already back to the peak of 1920, while paper prices have never returned to the levels of that year. There is every reason to anticipate a high volume of business extending well into 1924. The fine paper mills are even in the summer dullness operating with 85 per cent. of orders. Book and wrapping mills in many localities are running at capacity. The book paper demand is increasing."



Montreal, June 24. —This is the slack season for the local paper trade, and it is not surprising to learn that business is on the slow side. While there is no actual depression, the orders are not coming in at a very satisfactory rate, and these have to be pretty diligently drummed up. The printing section is quiet, and a valuable source of business is thus curtailed.

Those who are inclined to take a pessimistic view of general commercial conditions will find no support for their opinions in the trade returns for June. These were the best for any June since 1920, and show a favorable balance of $9,118,000. With one exception, the main groups of exports indicated increases, as compared with June last year, some of the gains being very substantial. Forest products continue to advance, exports totalling $25,146,150 as compared with $20,022,455 in June of last year. Imports for June of this year were also higher, the chief increases being in agricultural products, iron and steel and non-metals.

From the domestic and export points, the pulp and paper industry is in a healthy condition. The fact that the Brompton Pulp and Paper Company has been able to clear up the arrears on the preferred stock is evidence of a gradual recovery.

The most serious question affecting the industry as a whole is the destruction by fire of our raw supplies. This is much greater than is generally supposed, and calls for more drastic measures to prevent these periodical outbreaks. The Companies are spending large sums in order to obtain the best results from manufacturing, and at the same time are losing actually enormous sums owing to fires which are mostly preventable. Those who violate the laws and thus cause this waste should, on conviction, be sent to prison without the option of a fine.

With regard to newsprint, the demand is keeping up very well, and is in advance of this time last year. The statistics of the average number of pages issued by the daily papers of the U. S. are significant. Usually during the summer the number of pages decline, but this year the number during the months of March, April, May and June have remained at an average of 28, against 25½ during the corresponding period last year.

In the pulp section, there is no change of any note. Groundwood remains in good request, at firm values, and with comparatively little offering. Sulphite is steady, while bleached is on the old basis, fair orders and good prices.

According to the report of a lumberman who has just returned from an extended visit to the Abitibi district, the amount of pulpwood cut there has been considerably reduced as compared with the previous season. The mills preferred to put the lumber into lath, for which there has been a very heavy demand.

Ontario Market News

The paper trade in Ontario is still suffering from the effects of the summer holidays and business generally is quiet. Production is keeping up fairly well. For instance mills running on S. C. book report a good demand for that line, although the call for bonds, writings and ledgers is very light. Although there is not the output of any line of paper just now that there was a few months ago manufacturers say that the outlook for increased demand in the fall is good. Board mills are operating lightly although the recent drop in price has somewhat stimulated the demand and there is a fair amount of buying. Wholesalers report a rather brisk demand for the cheaper grades of mill blanks and boards of this class are selling well, due probably to the extra work entailed by the approach of the National Exhibition. That big Canadian institution is responsible for a lot of printing and the consumption of vast quantities of paper and both printers and paper distributers are beginning to reap the benefits. Outside of this line of work, however, the printing trade is quiet, some of the firms closing down all day Saturdays during the summer months. This applies to centres like Toronto and Hamilton and travellers report that paper buyers in the province generally are not taking in any stocks. The experience of most of the salesmen for the city houses is that the average small printer in the province now does not buy his paper until he has his job locked up on the stones. This hand to mouth buying has extended to some extent to the wholesale jobbing houses very few of which are laying in any paper stocks of size. Competition is rife amongst the wholesalers in most paper lines and the printer, paper converter and other users are getting the benefit. The envelope manufacturing trade is fairly good and a considerable amount of the cheaper grades of blotting is being sold. Little of the higher grades of blotting is being called for which indicates the desire on the part of the consumer to keep down his printing and paper bills. The paper box industry is going along nicely and shows a sound tendency despite the fact that at the moment business is rather quiet. One leading Toronto paper box maker declared that the industry was on a decidedly healthy basis and that business now was better than it was a year ago, with a decidedly bright outlook for the future. He looked for a greatly stimulated demand for all paper lines in the fall.

RAG AND PAPER STOCKS. —The market for waste paper shows a firmer tone, collectors reporting that throughout the recent slump the prices of the better grades have held up very well. In the rag market the demand for thirds and blues is good, while the various grades of new cotton cuttings are keeping up fairly well considering the time of the year, and prices are fair. The rope market is reported as rather quiet. The following prices prevail: paper stock, No. 1 hard white shavings, $3.90: No. 1 soft white shavings, $3.30: heavy books and magazines, $1.60: ledgers and writings, $2.00: No. 1 kraft, $2.25: newspapers, $1.00: No. 1 mixed papers, repacked, 85c: No. 1 miscellaneous, 75c: No. 2 miscellaneous, 57½c: Rags, thirds and blues, repacked, 2½c: No. 1 white shirt cuttings, 12¼c to 12½c: fancy shirt cuttings, 5¼c to 5½c: canton flannel, bleached, 10½c to 11c: white lawns, 9c to 9¼c: blue overall cuttings, 7c to 7¼c: No. 1 manila rope, 5¼c to 5½c: mixed strings, 1¼c.

PULP. —There is no material change in the pulp

situation. As far as can be learned stocks in the hands of pulp manufacturers are just about normal and none of the paper manufacturers are carrying excess stocks. There is comparatively little activity in the market on the part of either buyer or seller. Prices are holding fairly firm, groundwood still being quoted at $38.00. Bleached sulphite is selling at from $80.00 to $90.00; unbleached at from $65.00 to $70.00 and news grade at from $60.00 to $75.00.

NEW YORK MARKETS

New York, July 21. —(Special Correspondence)— The markets in New York have been featured this week by developments in raw material. Nearly all kinds of raw stock consumed in the manufacture of paper have taken on a firmer price tone and in quite a few cases advances of no mean dimensions have occurred. In a majority of instances the rise in prices has been due to better demand from mills though in certain cases prices of raw material have advanced simply because of a shortage of goods. However, the fact that papermakers have been more actively in the market for raw stock would indicate that they are laying plans for broader manufacturing operations in the near future, and that they expect a good demand for paper to arise shortly.

Generally speaking, business in paper of most kinds has been quiet. Of course newsprint and book papers are moving in abnormally large amounts; there has been little or no recession in demand for these grades, but buyers have continued to limit their orders for other descriptions of paper, and jobbers have experienced a rather narrow trade, with the result but a limited number of orders has been placed with mills for fresh supplies of paper.

Newsprint is moving in a steady way in heavy tonnage. Possibly consumption has decreased slightly during the past fortnight. July and August invariably find publishers, particularly of afternoon papers, cutting down the size of their issues, owing to a decrease in display advertising, but the morning dailies are still putting out large issues, while Sunday issues are just as large as they have been at any time this year. Print paper mills are busily engaged. Most of them are operating at full capacity and are shipping out their product about as quickly as it leaves the machines; moreover, a good many of them have their output for some time ahead sold on contract so that they have nothing to bother about as regards operations for quite a while to come. Prices of newsprint are firm to an extreme. Spot shipments are fetching premiums, and there is but limited tonnage offered by manufacturers.

Book papers are steadily increasing in activity. There have been cases where some individual book mill has been in want of business and has cut prices with a view of corralling a lot of orders, and this has made for some irregularity in quotations, but prices in the long run display considerable steadiness, and most manufacturers are so well fixed with orders that they are not obliged to change their prices to attract buying.

There is but routine business in wrapping papers. As previously reported, imported supplies of kraft wrapping are serving to diminish business in the domestic product for the reason that importers are selling foreign paper at cheaper prices and that consumers find Swedish kraft equally as good in quality, if not better, than the home-made paper. However, converters are absorbing fair amounts of domestic kraft wrapping, and demand from such sources keeps mills moderately well engaged.

Fine papers are enjoying a relatively better demand than is usually the case in mid-summer. Reports from manufacturing centres generally tell of manufacturers running their plants at a good rate of capacity, and it is stated that but little of their current production is going into stock. Writing paper mills in the Holyoke district are having some difficulty with labor. After the strike of machine hands was averted the stationery firemen walked out because of a wage disagreement, and it is understood that most of the fine paper plants in that locality have been obliged to close down or curtail their operations this week.

Box boards show little change. The movement of boards is fair but there is nowhere near sufficient business to keep all the mills running full. A four-day per week schedule is still in effect at most plants, it is reported. Prices ruled steady at about $57.50 per ton f.o.b. New York for plain chip board, with some mills quoting the same price for news board and others asking $2.50 per ton higher or $60 for news board. The active season for boards is drawing near, and it is probable that demand will soon increase. Furthermore, it is likely prices will rise since waste paper, the chief raw material for the board mill, is displaying a strong advancing trend.

GROUND WOOD.— Reports almost without exception tell of a firmer market for mechanical pulp. It seems that the increased firmness is due as much to conditions at the producing as at the consuming end; in fact, many attribute the strengthening of quotations almost entirely to low water at grinding plants and the consequent reduction in production, which has prompted grinders to hold unsold stocks of pulp and in some cases to ask slightly higher prices. At any rate, the quotations named are invariably above the levels prevailing only a short while ago. Domestic producers want between $36 and $40 a ton f.o.b. pulp mills for prime spruce ground wood for prompt shipment, prices of course depending on the haul to consuming centres and the freight involved, while quotations from Canadian manufacturers are reported ranging around the $38 per ton mark. Newsprint mills are consuming ground wood in large tonnage and there is a fairly good call from other consuming sources, and it is asserted on good authority that grinding operations have diminished in numerous localities where mill streams are falling.

CHEMICAL PULP.— Chemical pulps display a stiffening price trend. No actual changes of importance have developed this week but the tone of values is firmer and it would seem as if at least slight advances were in order. Importers in particular are quoting pulp at firm prices. One reason for this is that the prices named by manufacturers on the other side of the Atlantic are at higher levels — in some cases beyond a parity with market levels here — while another reason seemingly is that there are but small quantities of foreign pulp on the spot in this country unsold. Sales of prime unbleached Swedish sulphite have been recorded at $70 a ton ex dock New York, and Scandinavian kraft pulp has sold at 3.35 cents per pound on the dock. Foreign bleached sulphite is quoted at around 4.75 cents a pound ex dock for the No. 1 grade, with secondary quality available at around 4.25 cents.

Domestic pulps are holding their own in price and are moving in fair volume though chiefly on contract.

There is a good call for kraft, and one of the largest manufacturers of this kind of pulp on this Continent reports receiving 4 cents a pound delivered consuming mills for all of his No. 1 kraft.

RAGS.— Increasing strength in low grades of rags as used by felt paper mills features the papermaking rag market. No. 1 roofing stock has sold this week at 1.45 cents a pound f.o.b. New York, and No. 2 stock at 1.30 cents New York. Certain felt mills have been actively in the market and have freely paid these figures, and the situation has tightened to the point where dealers are very cautious about booking orders for roofing rags owing to the scarcity of such material in packing circles. Foreign roofing stock also has sold freely. Importers report mills paying 1.50 cents a pound ex dock New York for dark colored cottons on the spot, and 1.60 cents for linsey garments. There has been some demand for rags for forward shipment from European sources but manufacturers have been unwilling to pay as much as for spot stocks, thereby indicating that they are in need of supplies and are willing to pay more for rags for quick delivery than in far-off positions.

Old thirds and blues are firming in price, and repacked rags of this description are readily bringing 2.75 and 3 cents a pound at dealers' shipping points, while rough packing has sold at 2.25 cents a pound. Old whites are under good inquiry and are firmly quoted. New cuttings are relatively quiet but dealers are holding stocks with comparative firmness and no important changes in quotations are noted.

PAPER STOCK.— Old paper of practically every kind is on the rise in value, and the market is characterized by more strength than has been noticed in several months. Mills are buying in fairly large amounts, though there is some complaint among dealers of the prices consumers offer, it being asserted by brokers that frequently mills bid figures which are below those they have to pay packers to secure stock. White shavings are very firm and are quoted at around 4.25 cents a pound f.o.b. New York for No. 1 hard, and 3.25 cents for No. 1 soft white shavings, with extra quality packing held at higher prices than these, as for example a sale of soft shavings to a particular paper mill was recorded several days ago at 3.40 cents New York. Book stock also is firm. Most dealers in this city ask at least 1.70 cents a pound f.o.b. New York for No. 1 heavy magazines, and there is but a limited supply to be had at this price basis. Old kraft paper is firmly quoted at about 2.10 cents per pound New York, ledger stock at 2 cents, white blank news at 1.90 cents, and No. 1 print manilas at 1.10 cents. Low grades also are stronger, sales of flat folded newspapers having been noted at 90 cents a hundred pounds, and of No. 1 mixed paper at 80 cents f.o.b. New York.

OLD ROPE AND BAGGING.— Demand from paper mills for old rope continues quiet and prices on this commodity evince a downward trend. No. 1 domestic manila rope is quoted by dealers at 5.75 cents a pound f.o.b. New York, and the probabilities are buyers could get some supply down to 5.50 cents. Old bagging is also quiet and is quoted at 1.15 to 1.25 cents per pound New York for No. 1 scrap burlap, and 80 cents a hundred pounds for roofing bagging.

Idleness and boredom shorten life — —hard work prolongs it.

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PAPER MARKETS IN NORMAL CONDITION

The paper markets of the United States are following a normal trend during the summer months, but already there are evidences of a more early resumption of activity than is customary in the fall, says a bulletin of the American Paper and Pulp Association. There is every indication of an influx of orders to the mills about the first of September, which will result in a renewal of the large scale production which marked the early portion of the year.

The only possible disturbing factor would be an effort by labor to secure advances as soon as the mills are busy with a surplus of orders. Already labor in some districts, receiving far above the pre-war scale, has asked for increases entirely out of proportion to the increases in the cost of living or of the prices of paper. Such unreasonable wage demands might serve to slow down business, but as one important district has voted against a strike, it would appear that the better thought of the labor group is against throttling prosperity by unjustifiable wage demands.

Activity Seen In September

With the labor situation apparently met there is every reason to anticipate that there will be a high volume of business through the balance of the year, and extending well into 1924. As stated before, the indications now are that short stocks will cause the jobbers to begin laying in normal supplies the first of September, instead of waiting until the middle of October, as is often the case. The fine paper mills are even during the summer dullness, which is normal and seasonal, operating with 85 percent of orders, and the same percentage of production.

The revival of activity, it would appear, will be in full swing soon after the first of September, or a month earlier than usual. The book paper demand is already improving. A shortage of ground wood is reported, and there is also a shortage of Scandinavian pulps for export.

Wrapping Mills at Capacity

The Federal Reserve Board has the following to say in connection with the paper situation:

"Newsprint production and shipments, after a drop in April, rose in May to the highest figures for any month on record. Stocks on hand increased slightly, but were still unusually low. Seasonal increases also occurred in production, consumption, and stocks of wood pulp during May, and likewise for the principal kinds of paper other than newsprint. They were also larger than during last May. Reports from the Philadelphia and Cleveland reserved districts indicate a slight slackening in the demand for many grades of paper during May and June. This is largely seasonal and the demand is generally still fairly satisfactory. Some manufacturers have curtailed production, but most book-paper and wrapping-paper plants are running at capacity. Wholesalers report that sales have fallen off since March. Contract prices have remained practically unchanged."

Optimism is expressed in the special paper industry summaries of the Federal Reserve Banks for Philadelphia and Cleveland, while the Boston reserve bank review tells of one large organization which is operating 5 percent above the normal rate for this season.

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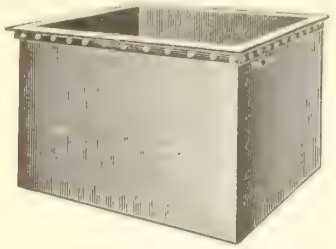
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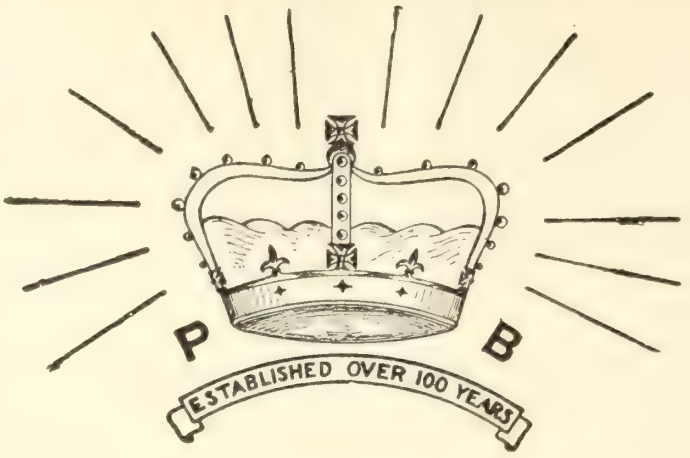
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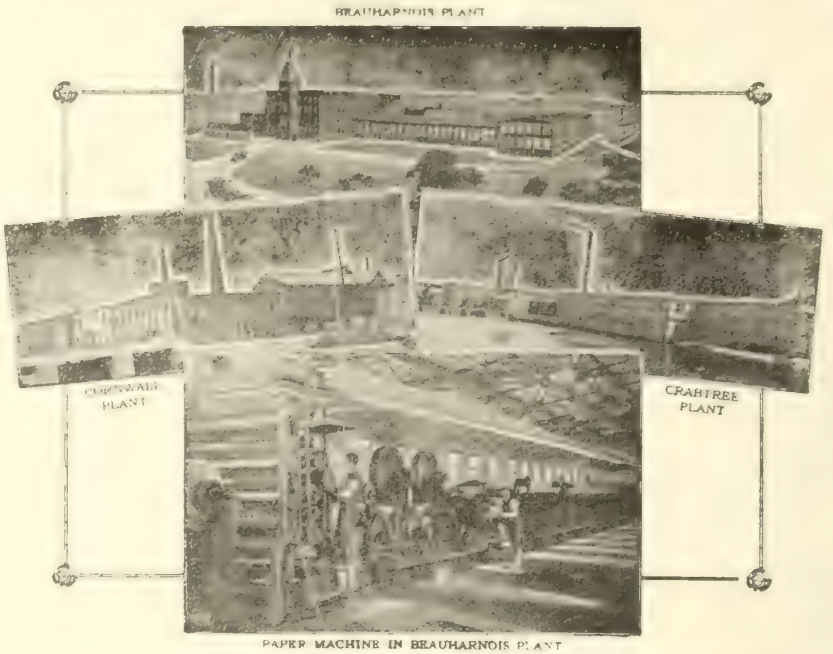
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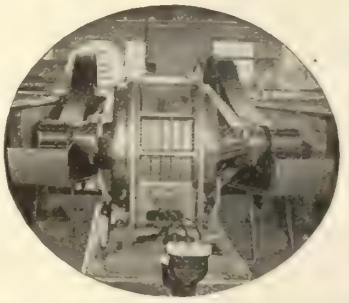
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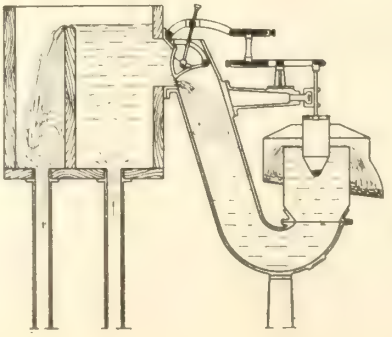
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ALPHABETICAL LIST OF ADVERTISERS

See Classified List on Page 73.

Unpaged advertisements appear in every other issue.

A

Alberene Stone Co., Ltd. 25
Abitibi Power & Paper Co. Ltd. .. 84
Acer, J. A. H. & Co., Ltd. 74
American Voith Contact Co., Inc. ..
American Stone Co. 24
American Woodpulp Corporation .. 24
Ayers, Limited 11

B

Babcock & Wilcox 1
Barrett & Co., Ltd., The .. ..
Barber, W. J. & Co., Ltd. .. ..
Bathurst Company, Ltd. 82
Bailey Meter Co., Ltd. 29
Bates & Innes, Ltd. 25
Bemis Manufacturing Association ..
Bertrams, Limited .. ..
Belgo Paper Co., Ltd., The 82
Beveridge Supply Co., Ltd. 72
Black-Clawson Co., The 72
Bolton, John W. & Sons, Inc. 26
Boving, Hydraulic & Engineering .. Company, Ltd. 16
Bristol Co., The 80
Brompton Pulp & Paper Co., Ltd. .. 82
Burgess, E. T. 30

C

Canada Foundries & Forgings, Ltd. 23
Canada Metal Co., Ltd. 28
Cameron Machine Co. 87
Canadian Combustion Co., Ltd. 16
Canadian Barker Co. 6
Canadian Des Moines Steel Co., Ltd. 87
Canadian Elixman Co., Ltd. 19
Canadian Equipment Co., Ltd. .. ..
Canadian Fairbanks-Morse Co., Ltd. 32
Canadian Ingersoll-Rand Co., Ltd. ..
Canadian Johns-Manville Co., Ltd. .
Canadian Mead-Morrison Co., Ltd. ..
Canadian Milk Products, Ltd. .. ..
Canadian Nashua Paper Co., Ltd. .. 86
Canadian Paperboard Co., Ltd. 24
Canadian Pipe Co., Ltd. .. ..
Canadian Robert Dollar Co., Ltd. ..
Canadian Sirocco Co., Ltd. .. ..
Canadian SKF Co., Ltd. .. ..
Canadian Vegetable Parchment Co., Limited 74
Canadian Vickers, Ltd. 7
Canadian Westinghouse Co., Ltd. ..
Capital Wire Cloth & Mfg. Co., Ltd. 26
Carey, Jas. L. 22
Christie, George, Ltd. .. ..
City of Hull .. ..
Clayton, Neil & Jones, Ltd. .. ..
Combustion Engineering Corporation Limited .. ..
Crane, Ltd. .. ..
Crittsinger, Burt Co., Inc. .. ..
Cleveland Stone Co., The .. ..

D

Date, John .. ..
Dept. of Lands, Forests & Mines Ontario .. ..
Dodge Mfg. Co. of Canada, Ltd. .. 5
Dominion Belting Co. .. ..
Dominion Engineering Works, Ltd. 19
Dominion Oxygen Co., Ltd. .. ..
Donnacona Paper Co., Ltd., The .. 24
Don Valley Paper Co., Ltd. The 24
Dryden Paper Co., Ltd. 24
Dunlop Tire & Rubber 12
Dunham, C. A. Co. 17

E

Elixman Paper Core Co., Inc. 19
Elk Fire Brick Co. of Canada, Ltd. 30
English China Clays, Ltd. .. ..
Engineering & Machine Works of Canada, Ltd. .. ..

F

Ferguson, H. S. 22
Ford, J. & Co. .. ..
Foundation Co., Ltd. 22

G

Galt Knife Co., Ltd. .. ..
Garden City Paper Mills, Ltd. 74
Geigy Co., Inc. 27
Goldie & McCulloch Co., Ltd. .. ..
Goold, Shapley & Muir Co., Ltd. ..
Gottesman, M. & Co 29
Graselli Chemical Co., Ltd., The ..
Graton & Knight Mfg. Co., Ltd. .. 21
Gutta Percha & Rubber, Ltd. .. ..

H

Hamblet Machine Co. .. ..
Hamilton, Wm. Co. of Canada, Ltd.
Hamilton Gear & Machine Co. 72
Hans Renold of Canada, Ltd. .. ..
Hardy, George F. 22
Harland Engineering Co. of Canada, Limited .. ..
Hay Knife Co., Ltd., Peter .. ..
Hendrick Mfg. Co. .. ..
Hercules Powder Co. 28
Holliday, L. B. & Co., Ltd. 78
Huestis, A. M. 86
Hydraulic Machinery Co., Ltd. 3

I

Industrial Engineering Co., Ltd. ..
International Business Machines Co., Limited. 23
International Pulp Stone Co., The 27
Interlake Tissue Mills Co., Ltd. ..

J

Jenkins Bros., Ltd. 21
Jenssen Co., G. D. 23
Johnson Wire Works, Ltd., The .. 30
Jones & Glassco, Regd. 80

K

Kalbfleisch Corporation, The 86
Kander Paper Stock Co., Ltd., The 24
Kenwood Mills, Ltd. 13
Kimball, Herbert S. 23
Kingsbury Machine Works .. ..
Klipstein, A. & Co., Ltd. .. ..

L

Lacey, James D. & Co. .. ..
Lagerloef Trading Co. 69
Langston, Samuel M. Co. 27
Laurentide Co., Ltd. 84
Lawrence Machine Co. .. ..
Link-Belt Limited .. ..
Lombard & Co. Inc. 27

M

Management Engineering & Development Co., The 23
Mead, Patton & Co., Ltd. .. ..
McArthur, Irwin, Ltd. 20
McAvity, T. & Co., Ltd. 32
McKinnon Steel Co., Ltd. 22
Mills Works & Machinery, Ltd. .. 80
Miramichi Quarry Co., Ltd., The .. 12
Montabone, J. A. F. .. ..
Montreal Locomotive Works, Ltd. .
Morrison, J. L. Co., The .. ..

N

National Paper Stock Co., The 24
Niagara Wire Weaving Co., Ltd. The..74
Northern Crane Works, Ltd. .. .. ..
Northern Electric Co., Ltd. .. ..
Northern Foundry & Machine Co. ..
Norwood Engineering Co. of Canada, Limited 26

O

Oliver Continuous Filter Co. .. .. ..
Ontario Wind Engine & Pump Co., Limited 7

P

Pacific Coast Pipe Co., Ltd
Peacock Brothers, Ltd. .. ..
Penmans Limited 20
Port Arthur Shipbuilding Co., Ltd. 12
Porritts & Spencer Co., Ltd. .. .. ..
Price Bros. & Co., Ltd. 76
Price & Pierce, Ltd. 82
Provincial Paper Mills, Ltd. .. .. ..
Pusey & Jones Co., The 18
Pulp & Paper Mill Accessories, Ltd. 85
Pulp & Paper Trading Co. .. ..

Q

Quarries, C. & M. Co. 72

R

Reed, Geo. W. & Co., Ltd. .. ..
Relph, Darwen & Pearce .. ..
Rolland Paper Co., Ltd. .. ..
Ross Engineering of Canada Ltd. .. 27
Russell Brothers 26

S

Sadler & Haworth .. ..
Sewall, Jas. W. 22
Sherbrooke Machinery Co. 9
Smallwood Stone Co., The 24
Smallwood Low Stone Co., Ltd. .. 27
Smith Howard Paper Mills, Ltd. .. 78
Spanish River Pulp & Paper Mills, Limited 86
Steel Trough & Machine Co., Ltd. . 72
Sterling Electrical Co. 22
Stinson-Reeb Builders' Supply Co., Limited .. ..
Stebbins Engineering & Mfg. Co. .. 17
St. Maurice Paper Co., Ltd. .. .. ..
Sturtevant Co., of Canada, Ltd. 87
Swenson Evaporator Co. 72

T

Tallman, Brass & Metal, Ltd. 74
Taylor, J. A. .. ..
Taylor, H. S., Ltd. 23
Texas Gulf Sulphur Co. .. ..
Ticonderoga Machine Works 18
Tippett & Co., Ltd. 25
Tyler, W. S. & Co., The 27
Trimbey Machine Works .. ..

U

Underfeed Stoker Co. of Can., Ltd. 2
Union Screen Plate Co. of Canada, Limited 23
Union Sulphur Co., The 30
United Wire Works, Ltd. 25

V

Vera Chemical Co. of Canada 72
Voorhees Rubber Mfg. Co. of Canada, Limited 19

W

Wallace, John H. W. & Co., Ltd. .. 22
Wardlaw, T. D. & Son 27
Walmsley, Charles & Co. Ltd. 14-15
Warren, Kenneth L. 22
Warwick Woollen Mills, Ltd. 28
Watford Engineering Works, Ltd. .. 8
Waterous Engine Works 90
Wayagamack Pulp and Paper Co., Limited .. ..
Weir, G. & J. (Canada), Ltd. .. ..
Westbye, P. P. .. ..
White, W. H. 22
Whyte, William 23
Wilson Patterson Co. .. ..
Wood Pulp Trading Co., Ltd. 70

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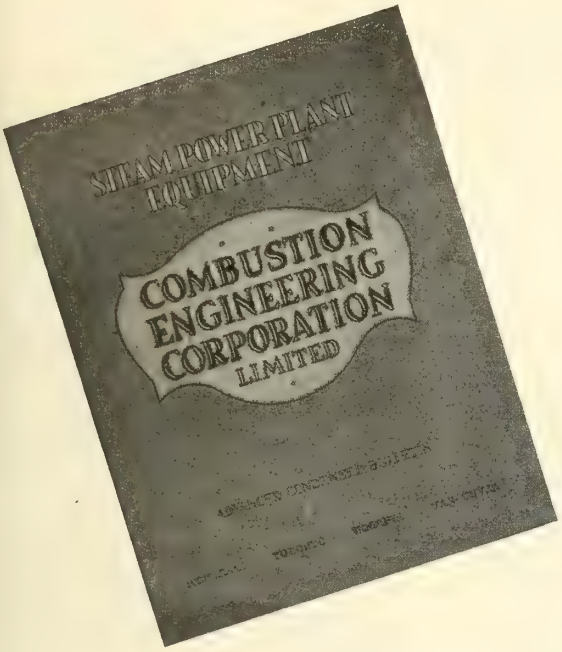
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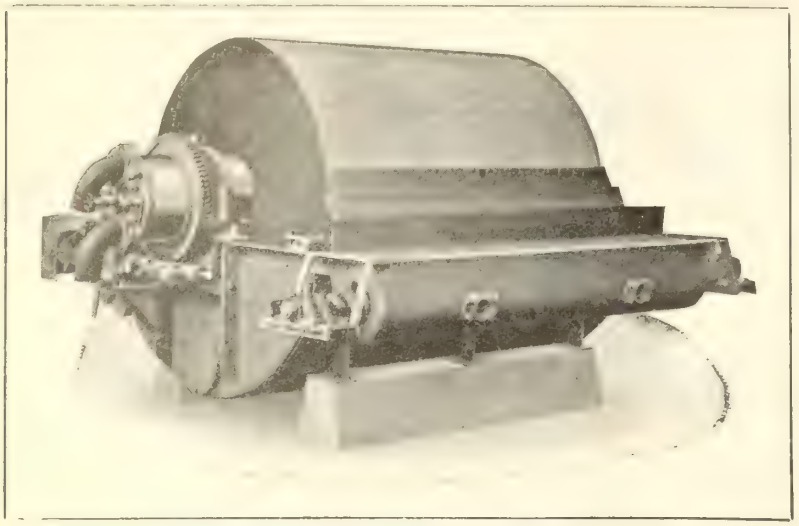
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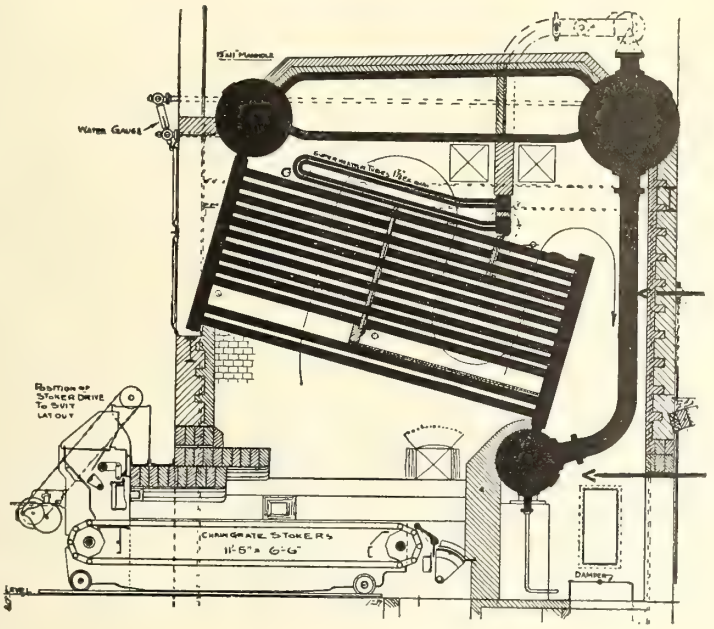
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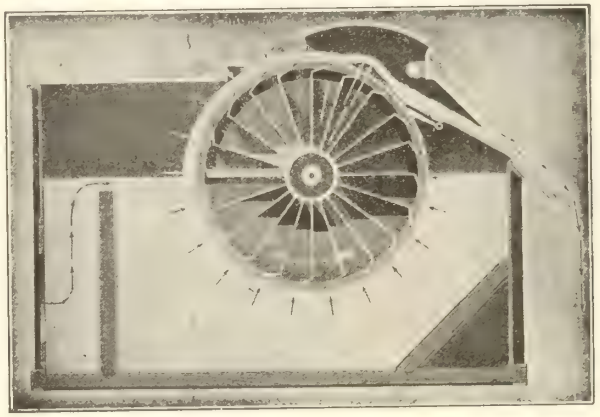


Diagram illustrating Cross Section of Pneumatic Save-All, showing direction of Air Pressures and Formation of Film of Fibres

Money SAVED pays dividends. Our Save-All is earning a million dollars a year for its users by saving waste fibre. We are now on trail of the other millions which are still flowing away each year in waste water.

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Some Known Facts and a Few New Ones

(1) Everyone interested in the paper business knows that there is more or less waste from beginning to end of the entire process.

(2) He knows that in every industry in the world financial success rests, in a very great degree, upon preventing waste, in finding and stopping up, one by one, every possible source of loss.

(3) He knows that great progress has been made, in his own business, by instituting wise economies — real economies—in management, in production, in the marketing of his product.

(4) And yet he knows that until recently very little progress has been made in preventing the enormous but hidden losses through waste water that is rich in fibre.

(5) He knows all about the schemes that have been exploited and the costs incurred in trying to save this waste, and that as a rule this waste still goes on because the measures tried have not proved capable of preventing it.

(6) Nevertheless, a way exists to save waste fibre successfully. The engraving gives an idea of this way, and we request only the opportunity to tell every mill owner and superintendent all about it.

(7) The reason of our success in this line is that we have found the one natural method of catching and holding the fibre as it flows away in the white water, and have applied this method in our Pneumatic Save-All.

(8) In the engraving our Pneumatic Save-All is shown in cross section. Inside the cylinder mould we produce a very slight vacuum, by a blower. The waste water is lightly sucked through the screen and drains away while the fibers are trapped and held upon the outside. They cannot rub off; they cannot slip through; for they are pressed flat upon the screen by air pressure. (See the inwardly pointing arrow heads.) At the top of the circle each section of the cylinder in turn comes under the direct action of the pressure side of the blower, and the film of pulp is lifted off (see the outwardly pointing arrows) onto a deflector. One Save-All and blower take only 5 H.P.; and the same blower, with very little extra power, will serve two Save-Alls.

We have installed hundreds of them in mills where old methods had proved useless, and where we have had to prove both the existence of heavy losses and the power of our Save-All to prevent them.

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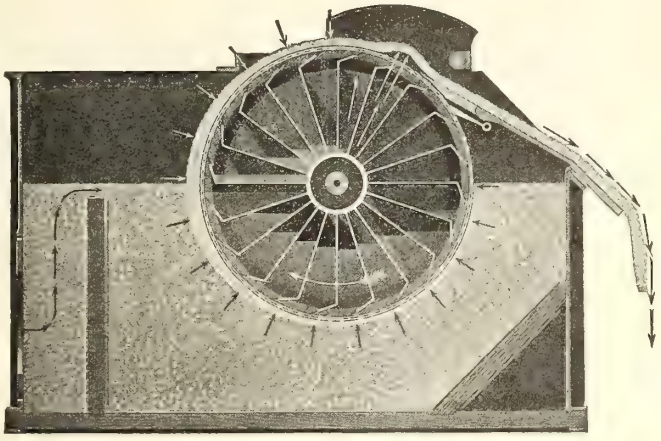
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SIMPLE, DIRECT, ECONOMICAL AND AUTOMATIC

THIS process is now in general use. It is installed in many prominent mills as their standard method, and has been in service over a period of several years, so that it is thoroughly established.

With our Pneumatic Thickener. the stock from screens is thickened directly to the density desired for the beaters, and is delivered to the beaters without going through the usual process of forming "laps" on a wet machine. The wet machine is used only for thickening stock to store or ship.



We particularly advise this method for thickening sulphite and soda pulp, as it delivers this class of stock in a perfectly smooth mass of uniform density, and our customers say that they have never before accomplished this result so successfully, even with wet machines.

The pneumatic method, being simple, direct, and automatic, is operated at far lower cost than is possible with wet machines.

In the special pneumatic pulp-thickening machine which we build the stock is thickened on a revolving cylinder mold by suction, and is removed by air-pressure. This action is rendered so uniform that all irregular thickening of stock is prevented. For example: if you desire to thicken to 3 per cent, we guarantee our Pneumatic Thickener to work at that point within ¼ of 1 per cent when properly installed.

Usually the Pneumatic Thickener is placed at an elevation sufficient to flow the filtered water back to the screens under the desired head, although it may be located wherever desired. It occupies a floor-space of approximately 6 x 12 feet.

We believe this method to be the cheapest to operate and maintain that is now in use.

The entire process is automatic and continuous. It dispenses with the costs of power and labor required in wet machine operation, and its sole cost is the slight expense of power required by the blower and to revolve the cylinder mold. Moreover, it occasions less waste of stock than the wet machine or the decker.

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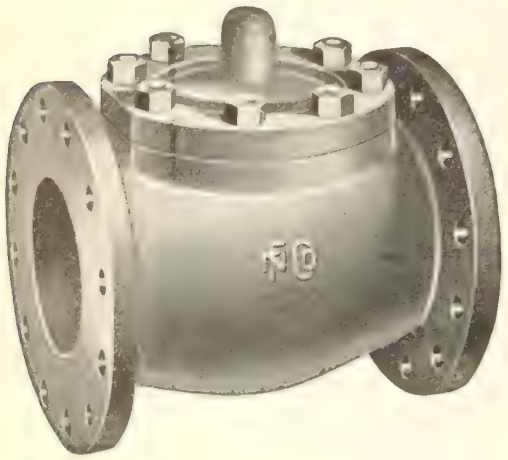
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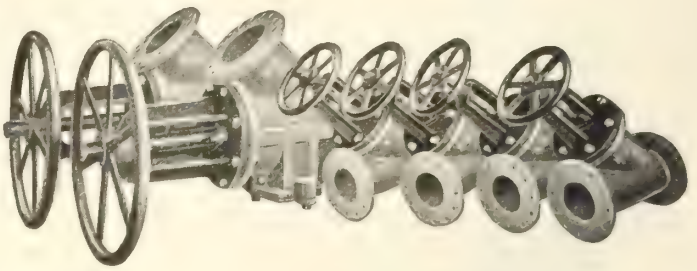
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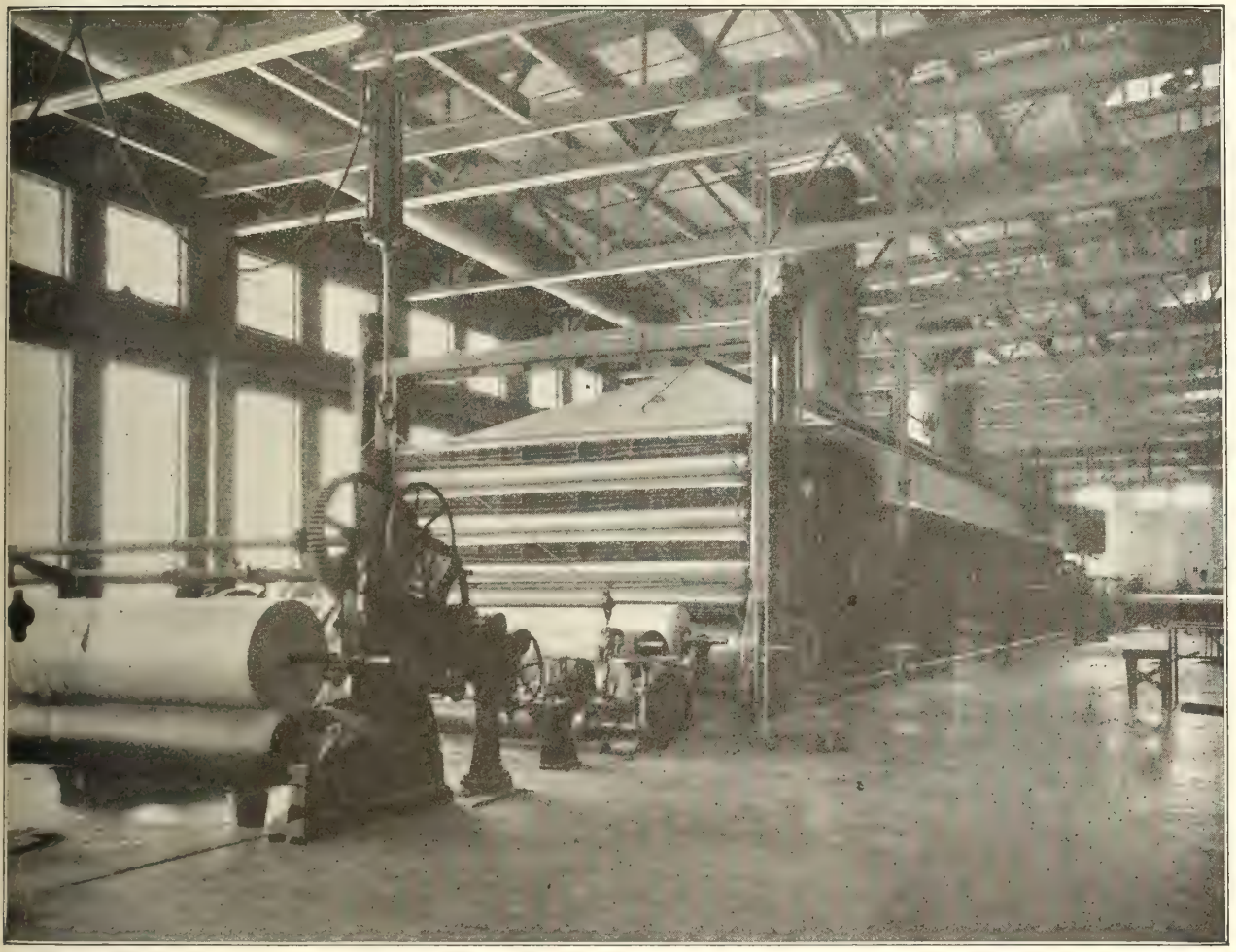
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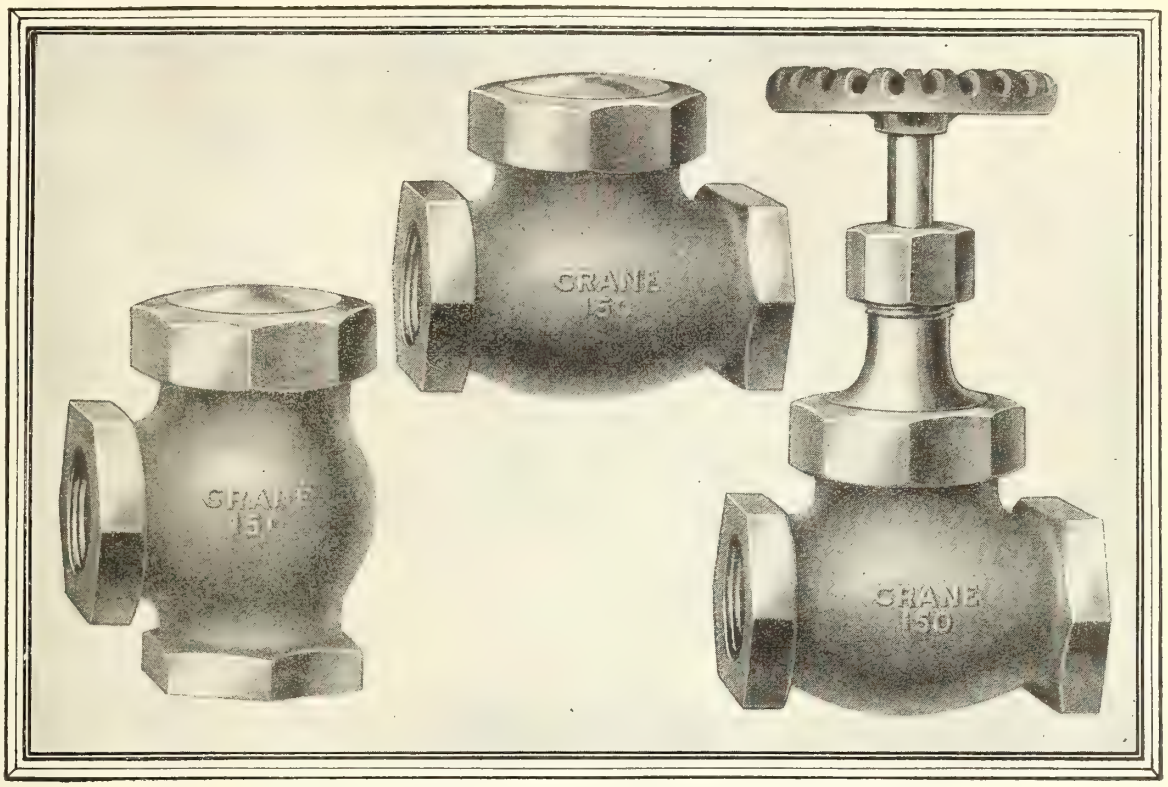
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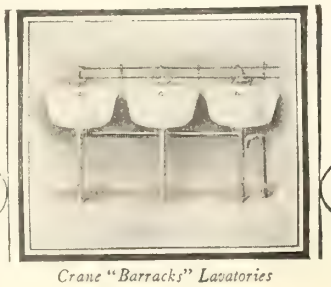
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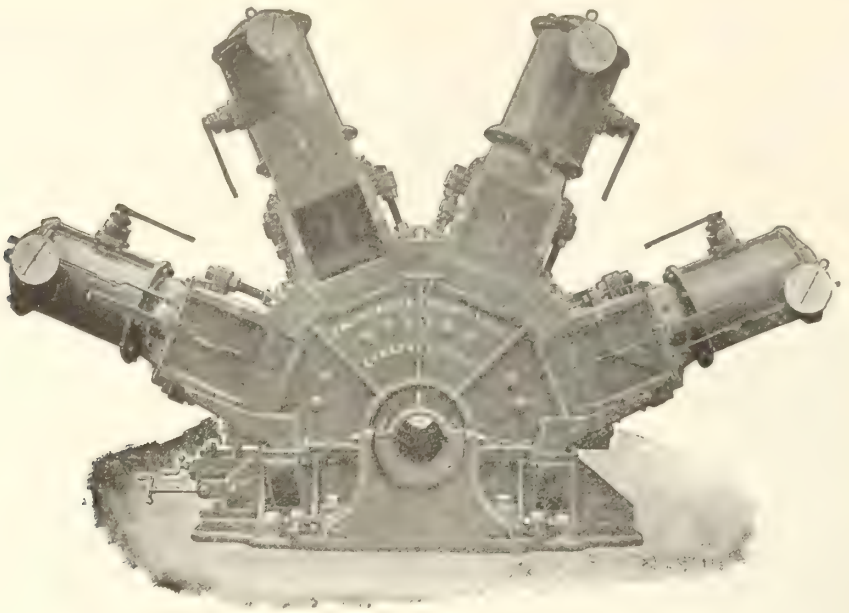
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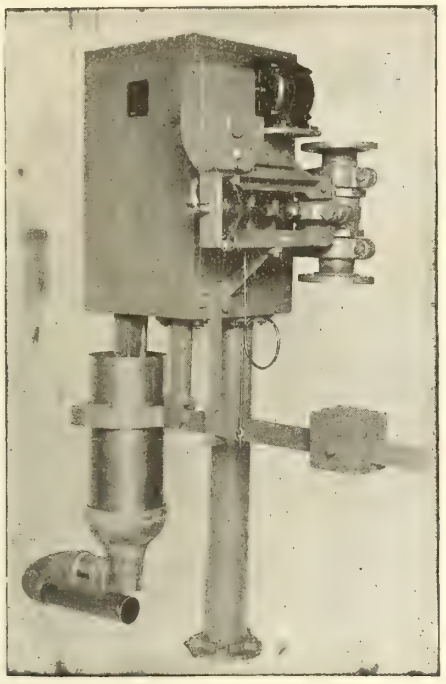
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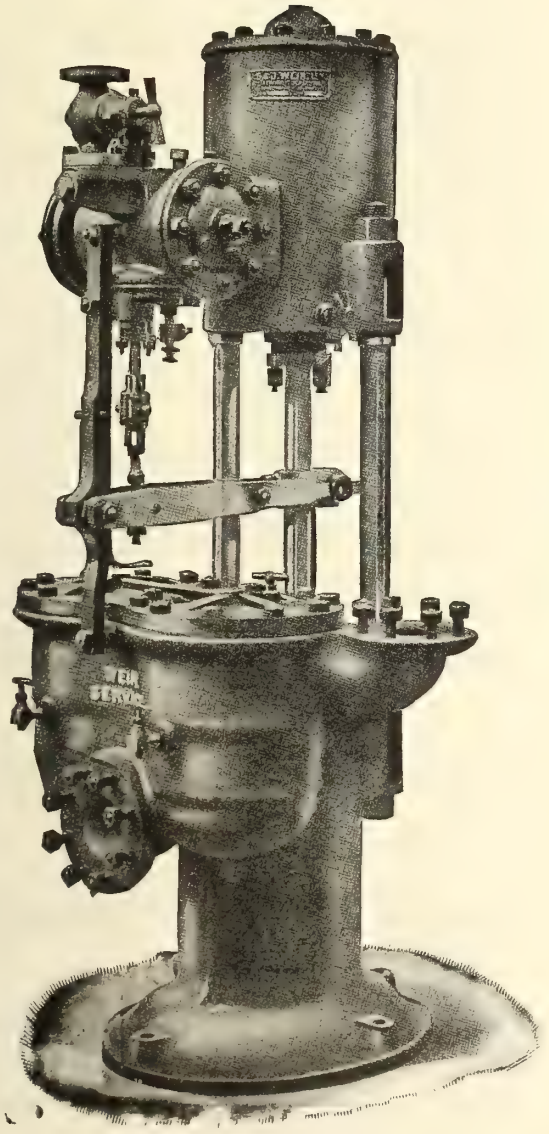
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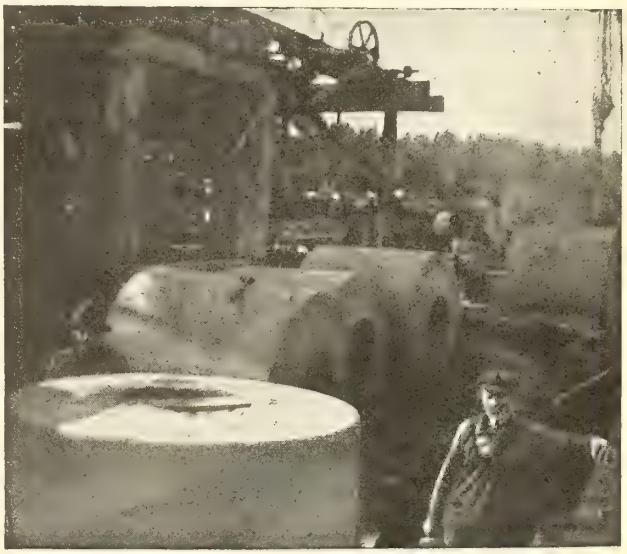
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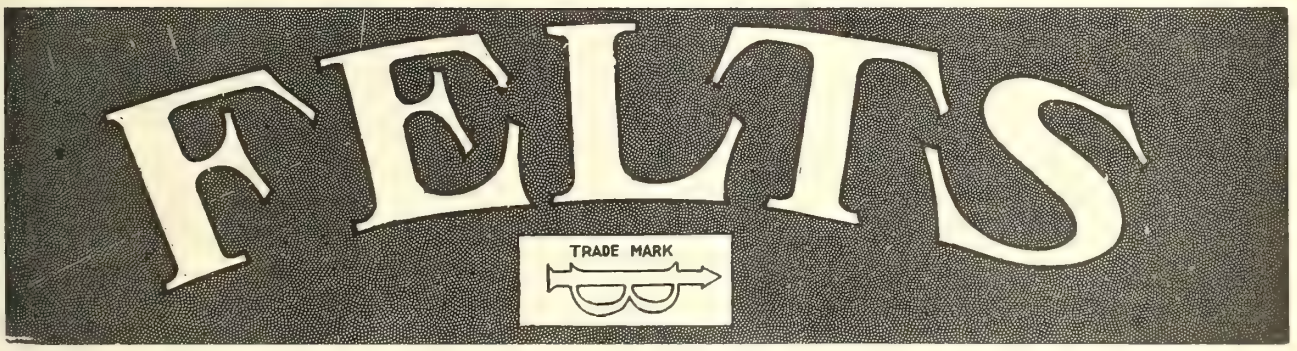
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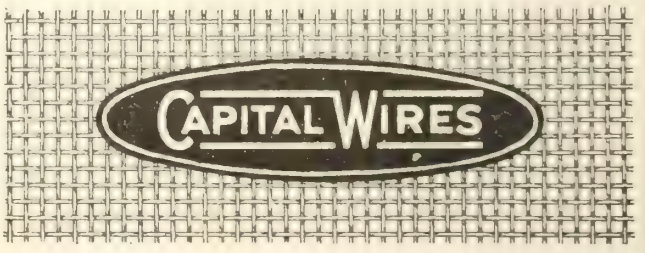
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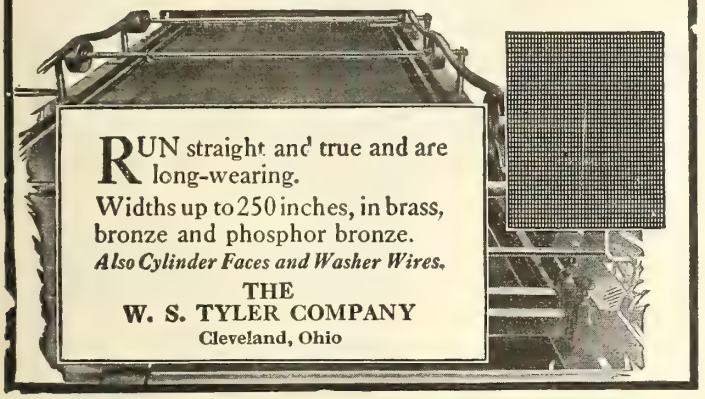
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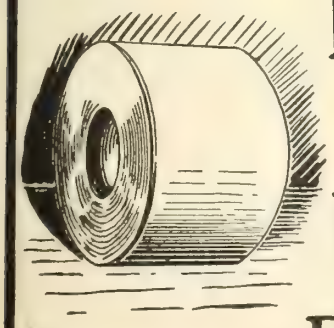
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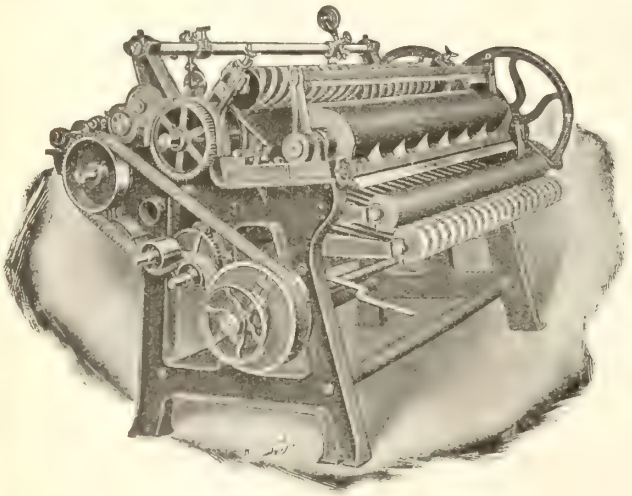
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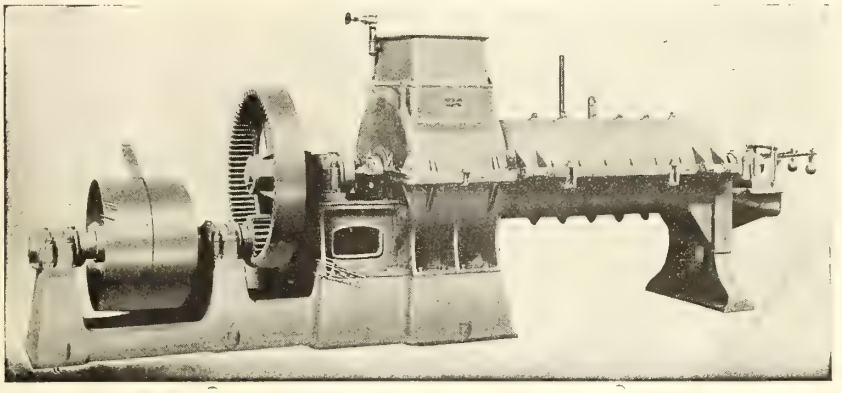
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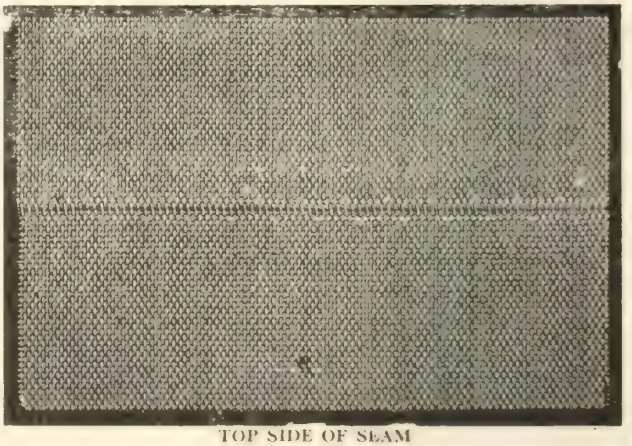
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VOL. XXI. GARDENVALE, QUE., August 2nd., 1923 No. 30

TABLE OF CONTENTS

Editorial:

The embargo will inspire protection of forests 765
Political trouble in Newfoundland 766
Can any mill in the world beat this? 777

Special Articles

Steam accumulators 767
American pulpwoods 771
The tour of the foresters 775
Sulphur consumption in the manufacture of sulphite pulp 780

News of the Industry

The chemical show 770
Will deal in pulpwood 774
Concerned about stumpage tariff 777
New minister of lands and forests 777
Installing "Tremor" screens 777
Pulp and paper school taking shape 780
Pulp and paper news 781
United States notes 783
Sherbrooke Machinery Co. uphold 784
Pulpwood exports to U. S. increasing 788

Miscellaneous Information

Review of recent literature 788
"The Engineering of Excavation" 779
"The Action of the Beater" 779
Bosses were wise 780
Cost Association literature available 784

The Markets

Canadian trade conditions 785
New York markets 786

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:-: EDITORIAL :-:

THE EMBARGO WILL INSPIRE PROTECTION OF FORESTS

Probably no other issue could have so rapidly and vigorously concentrated attention by the public on the serious forest situation on this continent as has the discussion of an embargo on all pulpwood cut on Canadian soil. The forest is, directly or indirectly, the real tax payer in several provinces of the Dominion. We can not see how our governmental expenses can be met, except every stick of timber be carefully guarded and eventually manufactured in Canada. Canada needs the taxes on every taxable property and income, and our industries, so largely based on the forest must not be allowed to become idle for want of raw material.

There are some men in Canada who are not convinced of the dire necessity of applying severe measures to protect the life of our wood using industries. Mr. Angus McLean, for instance, thinks the situation does not warrant the placing of an embargo, even though his own company would benefit. He takes a very generous attitude, which, however, if generally indulged in, would send many of his compatriots seeking work in a foreign land when their factories are closed for want of wood. There used to be an expression in the States, at the time of the Philippine occupation. "The Constitution follows the flag." Applying that to many Canadian localities, we may say "The population follows the wood." If we want our population to stay in Canada, we must keep the wood here to provide them employment. Every possible measure of protection must be taken.

The following extract from a letter written by Mr. F. J. D. Barnjum to the Editor of The Paper Mill, New York, indicates the urgent need for action and the eventual benefit of stringent measures in Canada to the forest lands and policies in the United States.

"Since the national disaster which overtook Canada in the destruction of 200,000,000 cords of standing pulpwood by the spruce bud worm, I have been unalterably opposed to the export of wood, as from personal examination I then became convinced that Canada had but a very small remaining supply for her own industries, and this supply is now being diminished yearly at an alarming rate through forest fires, beetles, wind and over-cutting.

"If no other result were obtained than my being the cause of the formation of the U. S. National Committee, composed of sixty-five members and some of the very brightest minds in the United States, (many of whom are my personal friends), with the main purpose in view of perpetuating the pulpwood forests in the United States, I should feel that I had been more than amply rewarded for the three strenuous years and the large amount of money that I have devoted to this campaign, for I think up to the time I began my agitation, the people of both the United States and Canada were pretty thoroughly asleep with regard to the alarming forest situation facing this continent. This situation, through my persistent efforts, has finally been forced on their attention, and I have no hesitation in saying that within a year or two, the timely warnings issued by me will be looked upon with keen gratitude by pulp and paper industries of both countries. Instead of spending any of the time, brains and money of this National Committee in the impossible proposition of opposing the embargo and in trying to see how much longer the United States can continue to rob their simple neighbor of the North of their meagre and rapidly diminishing wood supply, how much more manly, dignified and wise it would be to devote this same time and money and effort to devising ways and means for the protection and increase of the home supply.

"The United States may be, and undoubtedly is, in a deplorable condition with regard to its forests, but she is at least not exporting unmanufactured pulpwood, while Canada, which is in a far worse plight with regard to a wood supply, is still expected freely to export hers. I want to forewarn all of my good friends in the United States that this embargo on pulpwood out of Canada is going to be put into force, and that in the very near future, and there is no power on earth that can now prevent it. Any government in Canada which would now undertake to temporize with the critical forest situation here would be swept out of power in short order and without ceremony."

The American Paper and Pulp Industry has organized a very capable committee under the able leadership of Henry W. Stokes, President of the American Paper and Pulp Association. Mr. Stokes ably guided the effort of the committee of the same Association which for a number of years past has had in hand the activities of the American Association with regard to tariff matters.

In a very carefully worded letter to the Secretary of the State at Washington, the committee reviews the history of Provincial restrictions on the use of pulpwood cut on Crown land, the growth of the Canadian Pulp & Paper Industry, and closes with a number of reasons why the Department of State should intervene in behalf of the American Pulp and Paper Industry.

The core of the whole argument seems to be in the paragraph which reads, "**More than a million cords a year would be added to the annual drain on our own fast diminishing resources.**"

This statement is one of the strongest arguments that could have been advanced for the embargo, as it indicates that by taking such a measure, more than a million cords a year will be added to the wood supply available to Canadian pulp and paper mills.

The statement by Mr. Stokes that the price of pulpwood would increase and that this increased cost would result in an increased price of newsprint of at least $10 per ton indicates in turn that Canadian mills would have a sufficiently increased income to enable them to begin immediately the practising of sensible scientific forestry on a scale which will insure the perpetuation of this necessary supply of raw material. This, of course, is only assuming that the transfer of cutting operations from Canadian forests to American timberlands, which involves but 20% of the total United States consumption of pulpwood, only a part of which is involved in newsprint manufacture, is seized upon as an opportunity for advancing the cost of this commodity over the whole industry.

We fear that the American committee is projecting a relatively small but disproportionately important factor in their industry upon a very large screen and showing the difficulty with regard to the supply of 20% of their pulpwood requirements against a background which takes in the whole pulp and paper manufacturing industry together with all of the conversion plants, such as manufacturers of wall-paper, paper containers, stationery, etc., and the publishers of newspapers and magazines. There is no question but what all of these industries will, to some extent, be affected, but it is ridiculous to intimate that they will be ruined.

It will be interesting to learn, perhaps through the activities of Mr. Stokes' committee, what mills are affected by any steps along the lines made possible by the embargo resolution. We are under the impression that not over one-half, possibly not more than one-third of the pulpwood exported is used in newsprint manufacture, and we are under the impression that close to 75% of this exported pulpwood goes to mills that own or have access to some sources of domestic supply. It is doubtless true that even these concerns which have some timberlands, do not have sufficient for their needs, and many mills are entirely without a controlled supply of pulpwood and are dependent upon getting it where they can find it.

But why should the fact that pulp mills elsewhere are not taking measures for the perpetuation of their domestic supply deter Canada from taking necessary measures for protecting the life of her wood using industries? The plight of United States mills seems an argument for such measures rather than against.

The statement that Canadian newsprint mills will be able to monopolize United States markets at their own price is ridiculous. In the first place, the prices in the United States market are made in New York and not in Canada, and may eventually be made on the Pacific Coast or in Alaska. In the second place, it is not a question of monopolizing the market, but of so conserving the wood supply on the continent that the paper mills in both countries may be assured of continued operation, and an adequate supply of newsprint for the present and evergrowing demand for this commodity. In the third place, the wood using industries of Canada will soon reach, if they have not already passed, the economic limits of expansion based on presently available or remotely visible supplies of raw material. The American manufacturers need have no fear whatever of their elimination by competition of Canadian mills. As a matter of fact, there is probably less competition in this branch of the industry than in any other part of it. As stated previously, it is principally a question of being able to supply the demand. The only thing that will eliminate American newsprint mills is their failure to grow or conserve their own wood, and that very same thing applies to Canadian mills.

A serious crisis faces the whole industry, and every mill which dares look the forest in the face has every reason to be alarmed at the prospect and every need to tighten their belt and **start real conservation measures right now.**

POLITICAL TROUBLE IN NEWFOUNDLAND

A political event of considerable importance, but which may or may not have any effect on the plans for development of the pulp and paper and power proposition at the mouth of the Humber River is the recent resignation of Premier Squire.

There have been rumors of irregularity in connection with the administration of certain departments, and despatches from St. John's indicate that there is some connection between them and the resignation of the Premier and several members of his cabinet. Mr. Warren, a member of the old cabinet has assumed the leadership of the Government. The Squire Government, or at least the party to which the ex-premier belongs continues in power, and it will be recalled that in the recent election, the principal issue was whether or not the Newfoundland Government would guarantee principal and interest of $9,000,000 securities for the establishment of industries on the Humber River. The principal immediate development was to be the erection of a large pulp and paper mill for which it is understood construction work has already begun. With the present government party behind this movement, it would hardly seem likely that any change in that plan would result from the resignation of Premier Squire. The party still has a very comfortable majority and a new election has not been suggested.

The Pulp and Paper Magazine has a limited number of copies of Major Marx's translation of Dr. Sigurd Smith's excellent recent book "The Action of the Beater." — $3.60 post paid.

STEAM ACCUMULATORS

By M. EMANAUD

(Translated from "La Technique Moderne", xv, 193-197 (April 1, 1923) and 237-241 (April 15, 1923), by A. Papineau-Couture)

The operation of a boiler consists in maintaining the steam pressure at a value which, in most cases, must be kept constant and in ensuring at each instant the formation of an amount of steam equal to that which is used. Equilibrium would be extremely difficult to keep up but for the fact that evaporation of a liquid in a vacuum or when the pressure is appreciably lower than that of the maximum vapor pressure corresponding to its temperature is extremely rapid, and even practically instantaneous.

Consequently, as soon as the pressure inside the boiler is lowered by drawing off a certain amount of steam, there is a rapid evaporation to bring the pressure back to the vapor pressure at the temperature in the boiler. Even if there were no furnace, the pressure would return to a point very near the original pressure, because there is a generation of steam at the expense of a slight decrease in the temperature of the mass, the amount of heat required for the evaporation being absorbed from the heat accumulated in the water and in the boiler itself.

The problem of operating a boiler therefore resolves itself into a question of keeping a constant temperature. This will be accomplished more easily according as the ratio of the amount of heat accumulated in the boiler to the heat removed by the steam used each moment is greater, for the variations in temperature will be smaller. Hence, a large mass of water, massive brickwork, large grates carrying considerable quantities of burning coal, make for easier and more uniform operation. But they have very serious drawbacks: their weight, their size, and especially the increased danger and damage in case of an explosion on account of the large amount of pent up energy which would be instantaneously converted into work.

The history of the evolution of boilers is practically all taken up by the study of the compromises which have been made between these advantages and disadvantages; but on the whole as the unit capacity has been increased there has been a tendency to limit the size of the units and consequently to decrease the size of the grates and increase the rate of combustion, decrease the mass of water, the heating surface, etc. These reductions have been pushed very far in certain cases; but then the equilibrium conditions are adjusted so finely that very little is required to upset the balance. The temperature inside the boiler is no longer uniform, the evaporating surfaces are in contact with a mixture of steam and water in which at times the water may be entirely lacking, separation of the water from the steam does not take place properly, and things go smoothly only as long as conditions do not change at all. This state of affairs is extremely dangerous, for it takes very little to lower the efficiency or even to cause an explosion. It may be sufficient, for instance, to open up a steam valve too suddenly; the pressure in the boiler falls, equilibrium conditions are upset, and, as we have seen, there is a rapid generation of steam tending to restore equilibrium. But this evaporation does not take place only at the heating surface as under normal conditions, but also at the free surface and at all the metal surfaces, even those which are not heated directly. Moreover, very large bubbles of steam are formed and the normal circulation of water and steam in the boiler may be entirely upset.

In order to obtain smooth and regular working when the calorific capacity of the boiler is small, it is necessary to have continuous and regular operating conditions. As a matter of fact, proper working of the control apparatus presupposes this constancy of conditions: such is the case, for instance, for CO_2 recorders, and especially for water-level gauges which are usually considered as being based on hydrostatic principles and would therefore require that the fluids inside the boiler be in a state of equilibrium. Variations in the load are always difficult to handle, and it would be highly desirable that they be as slow as possible.

In many industries the steam requirements are essentially variable, while on the other hand constant and uniform production is no less essential. It is therefore necessary to have a buffer between the steam generator and the steam-using equipment, and the steam accumulator is such a buffer. A complete installation replacing the old-fashioned boiler should therefore comprise: a fire-box and combustion chamber, a bank of tubes for evaporating the water, a superheater, a feed water heater, an accumulator, and an air preheater. Such a combination is much less dangerous than an old-fashioned boiler of the same capacity, because the accumulator, though it contains a large mass of hot water, is much less liable to explode. Boiler explosions are nearly always due to a failure in the boiler shell, either at a point difficult to construct or owing to the burning of the shell. But the accumulator is not heated directly; and as there is no reason why it should be of a complicated shape it can consist merely of a cylindrical shell with hemispherical ends.

Discharge Curve of a Steam Accumulator

In view of the advantages which we have just described, it would seem as through the steam accumulator should have come into general use long ago. But as a matter of fact, though it was conceived quite a while ago, for a long time it was but little used. This anomaly can be readily explained by studying the discharge curve of an accumulator.

We shall assume that the walls of the accumulator are absolutely impermeable to heat, which can be approximately obtained in practice by proper insulation. Let t_0 be the initial temperature and P_0 the initial weight of water it contains. The accumulator is cut off completely from the boiler, and the steam valve is opened. The temperature drops. At any given moment, let P be the weight of water remaining and t its temperature. In an infinitely small time a weight dP of dry saturated steam will be withdrawn, the temperature will drop by an amount dt, and as, by hypothesis, there is no loss of heat through the walls and the variation of t depends entirely on the evaporation of the weight of water dP, we can write down the equation:

$$Pdt = (606.5 - 0.695t)\, dP \qquad (1)$$

or

$$\frac{dP}{P} = \frac{dt}{606.5 - 0.695t}$$

This follows from the well-known work of Regnault. Integrating between the limits P_0 and P, we have:

$$L\frac{P_0}{P} = \frac{1}{0.695} L \frac{606.5 - 0.695t_0}{606.5 - 0.695t}$$

or

$$\frac{P}{P_0} = \left(\frac{606.5 - 0.695t_0}{606.5 - 0.695t}\right)^{1.44}$$

or finally

$$\frac{P_0}{P} = K\,(606.5 - 0.695t)^{1.44}$$

in which

$$K = \frac{1}{(606.5 - 0.695t_0)^{1.44}}$$

Figure 1 shows the curves obtained by plotting the temperatures as ordinates and the weight of water evaporated in the accumulator (as a fraction of the original weight P_0) as abscissae. Each curve corresponds to a given original temperature t_0.

A mere glance at this diagram shows that the utilization varies within fairly narrow limits: if the accumulator is charged to a pressure of 5 kilos (about 65 pounds per square inch) absolute (equivalent to approximately 4 kilos gauge), corresponding to a temperature of 151°C., on releasing the pressure to that of the atmosphere a little less than one-tenth of the water will be evaporated. Starting with a pressure of 25 kilos absolute (corresponding to about 223°C.), only a little over two-tenths can be evaporated. And these values are maximums owing to the heat losses which are inevitable in spite of the insulation of the shell.

In Fig. 2 we have plotted from the above formulas the weight of water which is required to generate 100 kilos of steam, after cutting off the accumulator from the boiler, when the pressure is allowed to drop from the pressures shown as ordinates to the pressures shown as abscissae. It is readily seen that the weight increases quite rapidly within practical pressure limits.

Finally, Fig. 3 shows the kilos of steam (as ordinates) furnished by 1,000 kilos of water when the pressure in the accumulator falls 1 kilo below the initial pressure.

Consequently, if we consider the steam accumulator from the standpoint of a hot water reservoir, it is very bulky and can be used only within rather narrow limits. And yet, its use is imperative in certain cases, and its usefulness is daily gaining greater recognition. This is due to a factor which we have not taken into consideration in the preceding discussion, namely, "time." The above calculations do not involve time, as the production of steam is extremely rapid and the rate of discharge is a function only of the drop in pressure caused by drawing off steam. There is no limit to the rate of production of the steam, which could even be made to proceed at an explosive rate. The time taken to discharge the accumulator does not affect the above figures, and it is precisely the very great rapidity with which it can meet variations in the demand for steam which has made possible its many interesting applications. This is its characteristic quality which justifies its use as a thermal fly-wheel.

The reverse phenomenon, condensation in the accumulator of steam from a boiler or from the exhaust of a

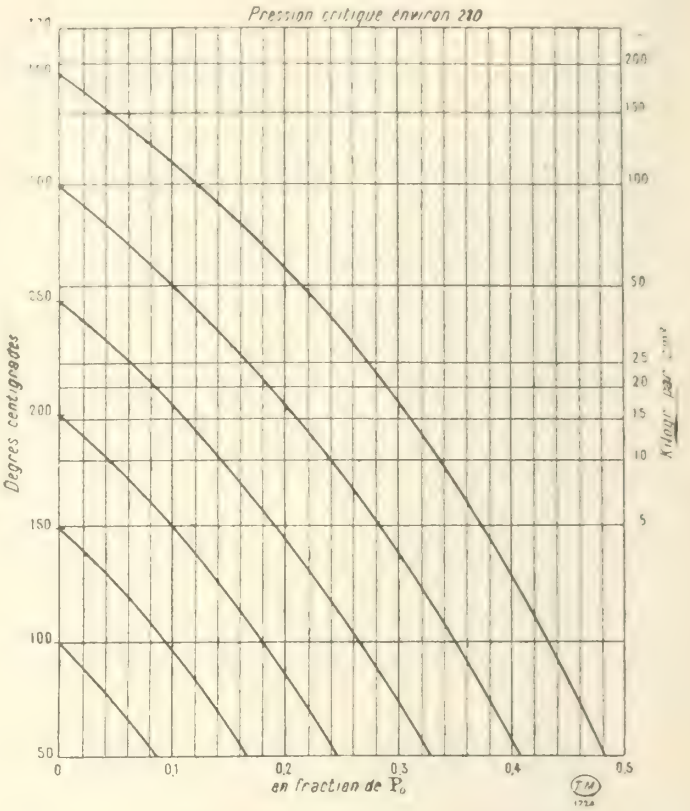


Fig. 1. — Diagramme de la décharge de l'accumulateur.

Fig. 1. — Curve of the discharge of an accumulator at various temperatures

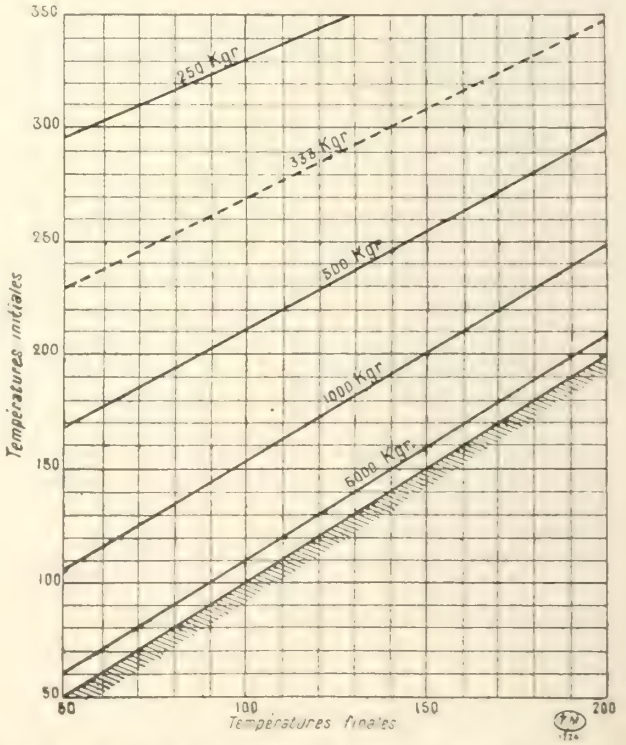


Fig. 2. — Poids de l'accumulateur capable de 100 kg de vapeur.

Fig. 2. — Weight of water required to give 100 kilos of steam in an accumulator

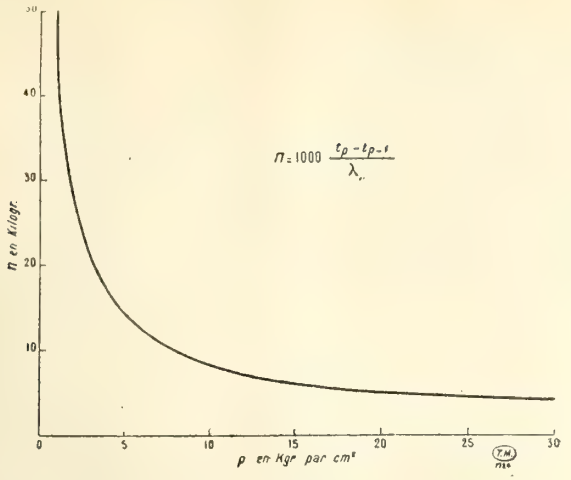


FIG. 3. — Poids de vapeur produit par un accumulateur de 1 000 kg pour un abaissement de pression de p à $p-1$.

Fig. 3. — Weight of steam produced by an accumulator of 1,000 kilos when the pressure falls from p to p — 1

machine, also takes place rapidly, but much less so than evaporation. Evaporation takes place at the free surface of the liquid, and also, by boiling, at all metal surfaces in contact with water. Condensation, on the other hand, occurs only at the free surface and at the points at which the steam enters the water, which points are necessarily limited in number and must be distributed as evenly as possible throughout the mass of water. The condensing surface is always much smaller than the evaporating surface.

But on the other hand condensation would soon stop if the heat brought by the steam was not evenly distributed in the accumulator. There is no trouble on this score during evaporation, as the bubbles which form at the metal surface ensure thorough agitation and exchange of temperature in rising to the surface. While charging the accumulator the heat is imparted by conduction and is distributed only by convection currents originating at the points at which the steam enters; and these methods are much less efficient, especially when the accumulator has not been carefully designed with a view to obtaining an even temperature distribution. If the steam were merely led in over the free surface of the water the upper layers of water would heat up, but no convection currents would set in and a considerable increase in pressure would be required to condense the steam.

Such a difference in pressure between the steam generator and the accumulator is always necessary; it is the price paid for the services rendered by the latter. It has a bearing on the time required for charging the accumulator; so that the factor "time", which we found to have no appreciable influence on the rate of discharge, acquires considerable importance in the reverse process, and consequently affects the operating cost.

We shall examine the various devices and means adopted by inventors for ensuring uniform temperature distribution during charging. We may incidentally mention that all the means used by boiler manufacturers for obtaining proper circulation in boilers can also be used here. In practice, the rate of discharge comes into play as a factor owing to losses of heat through the shell and losses due, in certain case, to variations in the pressure of the steam supplied to the accumulator.

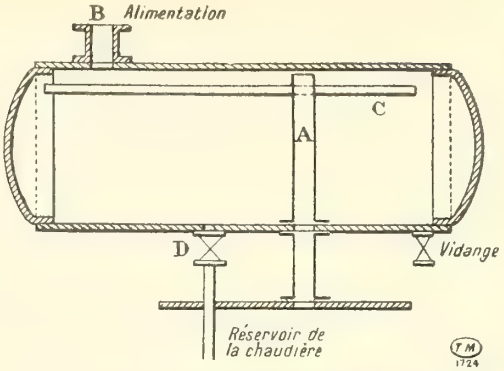


FIG. 4. — Dispositif d'accumulateurs système Halpin de la « Société d'éclairage électrique », de Kensington.

Fig. 4. — Halpin Accumulator used at the Kensington Electric Lighting Company

Alimentation	Feed
Vidange	Blow-off
Réservoir de la chaudière	Body of the boiler

Different Types of Accumulators

Halpin Accumulator — As early as 1892 Halpin accumulators were in use in England (Fig. 4). It is essentially a separate water reservoir, mounted directly over a Babcock and Wilcox boiler, but connected to it in a rather peculiar manner. The steam from the boiler is fed into the accumulator at A, while cold water in the form of a spray is fed in at B, heats up in contact with the steam, and drops in the drain C. When the demand for steam is low, water is fed continuously at B, the valve D being shut. The water level in the accumulator rises, and water is stored at the pressure of the boiler. The latter is fed with hot water from the accumulator. If the demand for steam rises above the production of the boiler, the cold water feed is cut off and the boiler is fed with the water in the accumulator, which is at the temperature of evaporation. The rate of production of steam is thus increased without any increase in the rate of burning of the fuel.

Seven Babcock and Wilcox boilers, each equipped with an accumulator 1.50 meters in diameter and 6.60 meters long and capable of containing 9,500 kilos of water, which filled up especially during the night, allowed the Kensington Electric Lighting Co. to take care of the daily peak in the load without increasing the number of boilers.

This apparatus is really a combination of an accumulator and a feed-water heater and purifier.

Fireless Locomotives — We can mention in this connection the boilers of the fireless locomotives which for quite a while, about 1900, ran between Saint-Germain-en-Laye and Poissy. They were really nothing more nor less than accumulators, which were charged at Poissy by means of a stationary boiler, and which made the trip to Saint-Germain-en-Laye and back without recharging. Such boilers are still used in certain special cases.

Rateau Accumulator — Rateau, who in 1902 installed an accumulator at the Bruay mines, worked along entirely diferent lines. The purpose of his apparatus was to receive the exhaust from an extracting machine, which ran intermittently for a few minutes at a time, and to regenerate it for continuously supplying a low pressure turbine driving a 300 horsepower machine. The extractor originally used 6,400 kilos of steam per hour, and exhausted into the atmos-

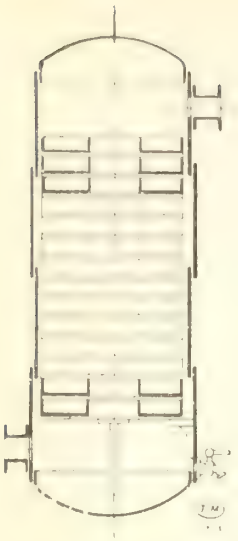


Fig. 5. — Elément d'accumulateur système Rateau aux mines de Bruay

Fig. 5. — Unit of Rateau accumulator at the Bruay mines

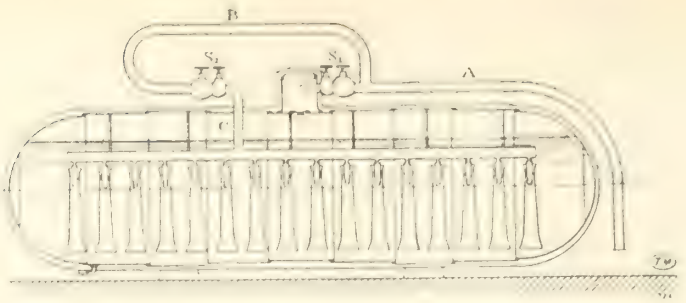


Fig. 6. — Dispositif des accumulateurs système Rateau des mines de Béthune.

Fig. 6. — Rateau accumulator at the Béthune mines



Fig. 7. — Dispositif du mélangeur système Rateau.

Fig. 7. — Mixer for the Rateau accumulator

phere. The turbine used this steam between pressure of 0.90 and 0.15 kilos (about 12 and 2 lbs. per square inch, respectively), with maximum variations of 0.25 kilo in the accumulator and corresponding temperature variations of 3 to 6° C.

The accumulator consisted of four identical sections each of which was a vertical cylindrical shell (Fig. 5) of boiler plate, containing a series of superposed annular cast iron troughs which were full of water. The total weight of cast iron was 40 tons. The idea of this construction was to ensure a sufficient calorific capacity and a large contact surface for the steam with the water or the iron in the accumulator. The steam circulated between the shell and the troughs, in the central space, and around the various troughs, thus ensuring a uniform temperature distribution.

The following accessories were also provided:

1) An automatic valve allowing the extractor to exhaust into the atmosphere in case the turbine was stopped or working under a light load;

2) An automatic pressure reducer, allowing the turbine to be run directly on live steam when the pressure fell too low in the accumulator.

3) An automatic blow-off to remove the excess water entrained by the steam.

In view of the success of this installation, several other forms were studied, and a new type was installed at the Bethune mines, in which the cast iron was entirely eliminated. The accumulator contained only water, which has a maximum calorific capacity and the use of which is particularly advantageous as it costs nothing.

The apparatus (Fig. 6) is a cylindrical horizontal shell, about two-thirds full and containing approximately 10 cubic meters of water. In order to ensure thorough and even distribution of the heat of the steam, the latter is admitted through A, below the water level, into four flattened cylinders C, the vertical walls of which are perforated with numerous holes. On escaping through these holes the steam condensed and caused violent agitation in the spaces between the cylinders C. A check-valve prevented the water from backing up into the machine. The accumulators received 4,500 kilos of steam an hour, at two minute intervals.

It will be noted that in both these types considerable attention was given to the devices allowing the accumulator to absorb "rapidly" large quantities of heat, and they clearly show the two solutions possible: subdividing the mass of water into numerous thin films, or causing intense circulation in the mass of water.

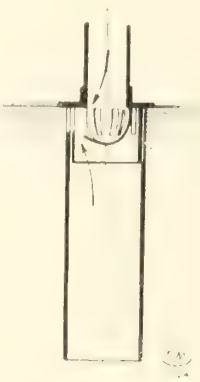


Fig. 8. — Dispositif du mélangeur système Morison.

Fig. 8. — Mixer for the Morison accumulator

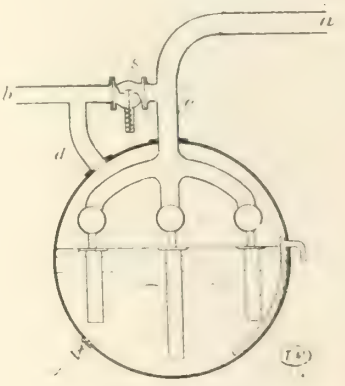


Fig. 9. Coupe transversale d'un accumulateur système Morison.

Fig. 9. — Cross section of a Morison accumulator

In the later accumulator designed by Rateau he used the mixer shown in Fig. 7. The steam enters through pipe T, below the level of the water, impinges on c, which reflects upwards the steam and condensed water which go out through the orifices a. This causes an upwards current in the cylinder B, which is entirely submerged, and causes a general circulation throughout the mass of water.

Morison Accumulator — Fig. 8 shows the mixers used in the Morison accumulators, of which Fig. 9 is a cross-section. The steam comes through a, and owing to the automatic valve s is sent either directly to the low pressure turbine through b or to the accumulator through c, whence it goes to the turbine through d. It is seen that the cylinders of the mixers extend practically right down to the bottom of the accumulator.

(To be continued)

Plenty of folks have a good aim in life but most of them don't pull the trigger.

American Pulpwoods

The Suitability of Various Species of American Woods for Pulp and Paper Production

By SIDNEY D. WELLS

(Continued from last issue)

LONGLEAF PINE — *Pinus palustris.* Wt. 34 lbs. Fiber 3.7 m.m.

Range — Coast region, from southern Virginia (Norfolk) to Florida (Tampa Bay and Cape Canaveral) to eastern Texas (Trinity River); northward in Alabama to the northeastern part of the state (Clay and Walker counties) and northwestern (border counties) Georgia.

Common Names — Long-leaved pine (Va., N.C., S.C., Ga., Ala., Fla., Miss., La., Tex.); Southern pine (N.C., Ala., Miss., La.); Yellow pine (Del., N.C., S.C., Ala., Fla., La., Tex); Turpentine pine (N.C.); Rosemary pine (N.C.); Brown pine (Tenn.); Hard pine (Ala., Miss., La.); Georgia pine (general, Del); Fat pine (Southern States); Southern yellow pine (general); Southern hard pine (general); Southern heart pine (general); Southern pitch pine ègeneral); Heart pine (N.C. and South Atlantic region); Pitch pine (Atlantic region); Long-leaved yellow pine (Atlantic region); Longleaved pine (general); Heart pine (N.C. and South Atlantic region); North Carolina pitch pine (Va., N.C); Georgia yellow pine (Atlantic region); Georgia heart pine (general); Georgia longleaved pine (Atlantic region); Georgia pitch pine (Atlantic region); Georgia pitch pine (Atlantic region); Florida yellow pine (Atlantic region); leaved yellow pine (Atlantic region); Long-leaved pine (Atlantic region); Texas yellow pine (Atlantic region); Texas long-leaved pine (Atlantic region).

Sulphite Pulp

Yield — 1,840 lbs. (crude pulp).
Character — Cannot be bleached; Very poor color; In general, this wood cannot be considered satisfactory for sulphite pulp.
Possible uses — Few

Sulphate Pulp

Yield — 1,600 lbs.
Character — Strong, but coarse fiber
Possible uses — Similar to white spruce

MONTEREY PINE — *Pinus radiata.* Wt. 29 lbs. Fiber.

Range — California (Point Pinos on Monterey Bay, and along the cost from Pescadero to San Simeon Bay.)

Common Names — Monterey pine (Cal.); Spreading-cone pine (Cal. lit.); Nearly smooth-cone pine (Cal. lit.); Remarkable pine (Cal. lit.); Small-coned Monterey pine (Cal. lit.); Two-leaved Insular pine. [3]

Sulphite Pulp

Yield — 1,260 lbs.
Character — Easily pulped; Difficult to bleach; Good color; Fair strength.
Possible uses — As a substitute for white spruce.

Sulphate Pulp

Character — Easily pulped; Difficult to bleach; Good strength.
Possible uses — Similar to white spruce.

NORWAY PINE — *Pinus resinosa.* Wt. 27 lbs. Fiber 3.7 m.m.

Range — From Newfoundland and along the northern shores of St. Lawrence Gulf to northern Ontario (north of Abitibi Lake) to southern Manitoba (near southern end of Lake Winnipeg); southward through the Northern States to Massachusetts (Middlesex County, Pennsylvania (Chester County), northeastern Ohio (north of Cleveland) central Michigan (Saginaw), northern Wisconsin (Oshkosh and Eau Claire), and northeastern Minnesota.

Common Names — Red Pine (Vt., N.H., N.Y., Wis., Minn., Ont.); Norway pine (Me., N.H., Vt., Mass., N.Y., Wis., Minn., Ont.); Hard pine (Wis.); Canadian red pine (Eng.).

Sulphite Pulp

Yield 1,230 lbs.
Character — Difficult to pulp and bleach; Poor strength.
Possible uses — Few.

Sulphate Pulp.

Yield — 1,350 lbs.
Character — Fairly easily bleached.
Possible uses — Similar to white spruce.

Mechanical Pulp.

Because of high pitch content is probably unsuitable for this purpose.

PITCH PINE — *Pinus rigida.* Wt. 29 lbs. Fiber

Range — From southern New Brunswick (St. Johns river) to eastern Ontario (north shore of Lake Ontario and lower Ottawa river) and southward in the Atlantic region to southern Virginia (Norfolk) and along the mountains to northern Georgia (Atlanta); west to western New York (Ithaca), northeastern Pennsylvania, eastern Ohio (border counties south of Canton) and Kentucky, eastern Tennessee (to Cumberland Mountains).

Common Names — Pitch pine (Vt., N.H., Mass., R. I., Conn., N.Y., N.J., Pa., Del., W.Va., N.C., S.C., Ga., Ohio, Ont., Md., Eng.); Longleaved pine (Del.); Longschat pine (Del.); Black Norway pine (N.Y.); Hard pine (Mass.); Yellow pine (Pa.); Black pine (N.C.); Rigid pine (Eng. lit.); Sap pine (lit.)

Sulphite Pulp.

Yield — 1,250 lbs.
Character — Difficult to pulp and bleach; Poor strength — pitchy.
Possible uses — Few.

Sulphate Pulp.

Yield — 1,430 lbs.

[3] Refers to the two-leafed form *Pinus radiata binnata* (Engelm.) Lemm., found on Santa Rosa, Santa Cruz, and Guadaloupe Islands.

Character — Fairly easily bleached.
Possible uses — Similar to white spruce.

Mechanical Pulp.
Because of high pitch content is probably unsuitable for this purpose.

POND PINE — *Pinus scrotina.* Wt. 31 lbs. Fiber

Range — Coast region from North Carolina to Florida (Head of St. Johns River and probably farther south; on the west coast from Pensacola to Citrus County and probably much farther south.) Range imperfectly known.

Common Names — Marsh pine (N.C.); Meadow pine (N.C.); Bond pine (N.C., S.C., Fla., Miss., La.); Leblolly pine (N.C., Fla.); Spruce pine (S.C., Ga.); Bastard pine (S.C., Ga.); Bull pine (S.C., Ga.)

Sulphite Pulp.
Yield — 1,360 lbs.
Character — Fairly easily pulped and bleached; Fair color.
Possible uses — As a substitute for spruce.

Sulphate Pulp
Yield — 1,400 lbs.
Character — Fairly easily bleached; Strong but coarse fiber.
Possible uses — Similar to white spruce.

Mechanical Pulp.
Probably the same as Loblolly pine.

SAND PINE — *Pinus clausa.* Wt. 29 lbs. Fiber

Range — Coast of Alabama (Baldwin County) and western Florida (to Pease Creek); east coast of Florida from St. Augustine to Halifax River.

Common Names — Sand pine (Fla., Ala.); Oldfield pine (Fla.); Florida spruce pine (Ala.); Scrub pine (Fla.); Spruce pine (Fla.); Upland spruce pine (Fla.).

Sulphite Pulp.
Yield — 1,300 lbs.
Character — Easily pulped; Difficult to bleach and shivey; Fair strength; Good color.
Possible uses — As a substitute for white spruce.

Sulphate Pulp.
Yield — 1,220 lbs.
Character — Fairly easily bleached.
Possible uses — Similar to white spruce.

Mechanical Pulp.
Because of high pitch content is probably unsuitable for this purpose.

SCOTCH PINE — *Pinus sylvestris.*[4] Wt. 37 lbs. Fiber

Range[4] — Europe and Northern Asia up to 700 ft. above sea level in the far north; 6,500 ft. in Southern Europe.

Common Names[4] — Scots (Scotland), Scotch fir (England), Northern pine (general).

Sulphite Pulp.
Yield — 1,600 lbs.
Character — Difficult to pulp and bleach; Poor strength and pitchy.
Possible uses — Few.

Sulphate Pulp.
Yield — 1,600 lbs.
Character — Fairly easily bleached; Strong, tough fiber.
Possible uses — Similar to white spruce.

[4] From English data.

Mechanical Pulp.
Because of pitch content is probably unsuitable for this purpose.

SCRUB PINE — *Pinus virginiana.* Wt. 26 lbs. Fiber 2.8 m.m.

Range — From New York (Staten Island) to South South Carolina (Aiken River) and northern Alabama (Winston, Cullmaak, and Dekalb counties); west into southern Indiana, to middle Tennessee (Putnam County).

Common Names — Jersey pine (N.J., Pa., Del., N.C., S.C.); Scrub pine (R.I., N.Y., Pa., Del., N.C., S.C., Ohio); Short Shucks (Md., Va.); Shortshat Pine (Del.); Spruce pine (N.J., N.C.); Shortleaved (N.C.); Cedar pine (N.C.); River pine (N.C..); Nigger pine Tenn.); New Jersey pine (lit.).

Sulphite Pulp.
Yield — 1,000 lbs.
Character — Easily pulped; Difficult to bleach; Good color.
Possible uses — As a substitute for spruce.

Sulphate Pulp.
Yield — 1,250 lbs.
Character — Fairly easily bleached; Strong, but coarse fiber.
Possible uses — Similar to white spruce.

Mechanical Pulp.
Similar to Loblolly pine.

SHORTLEAF PINE — *Pinus echinata* — Wt. 31 lbs. Fiber 3.7 m.m.

Range — From New York (Staten Island) to Florida (Chattahoochee region) and west to southern Missouri, eastern Oklahoma, and northeastern Texas.

Common Names — Yellow pine (N.Y., N.J., Pa., Del., Va., N.C,. Ala., Miss., La., Ark., Mo., Ill., Ind., Kans., (scarce), Ohio, (Eng. lit.); Shortleaved pine (N.C., S.C., Ga., Ala., Miss., Fla., La., Tex., Ark.); Spruce pine (Del. Miss., Ark.); Bull pine (Va.); shortshat pine (Del.); Pitch pine (Mo.); Poor pine (Fla.); Shortleaved yellow pine; Rosemary Pine (N.C.); Virginia Yellow pine (Va. in part); North Carolina pine (N.C. and Va. in part); Carolina pine (N.C. and Va. in part); Slash pine (N.C., Va., in part); Oldfield [illegible]e (Ala., Miss.).

Sulphite Pulp.
Yield — 1,500 lbs.
Character — Difficult to pulp and bleach; Pitchy.
Possible uses — Few.

Sulphate Pulp.
Yield — 1,450 lbs.
Character — Fairly easily bleached; Strong, but coarse fiber.
Possible uses — Similar to white spruce.

Mechanical Pulp.
Because of pitch content is probably unsuitable for this purpose.

SLASH PINE — *Pinus heterophylla.* Wt. 37 lbs. Fiber

Range — Coast region (60 to 100 miles inland), from South Carolina (Charleston) to southern Florida (Cape Canaveral and Biscayne Bay) and west to Louisiana (Pearl River.)

Common Names — Slash pine (Ala., Miss., Ga., Fla.); Swamp pine (Fla., Miss., Ala., in part); Bastard pine (Ala. lumbermen, Fla.); Meadow

pine (Fla., eastern Miss., in part); Pitch pine (Fla.); She pitch pine (Ga.); She pine (Ga., Fla.); Spruce pine (southern Ala.).

Sulphite Pulp.
Because of high pitch content is probably unsuitable for this purpose.

Sulphate Pulp.
Yield — 1,650 lbs.
Character — Fairly easily bleached; Strong, but coarse fiber.
Possible uses — Similar to white spruce.

Mechanical Pulp.
Because of high pitch content is probably unsuitable for this purpose.

WESTERN YELLOW Pine — *Pinus ponderosa.* Wt. 24 lbs. Fiber 3.6 m.m.

Range — From British Columbia (interior south of latitude 51°), and Dakota (Black Hills region), southward in the Pacific and Rocky Mountain region to western Texas and Mexico.

Common Names — Yellow pine (Cal., Colo., Mont., Idaho, Utah, Wash., Oreg.); Bull pine (Cal., Wash., Utah, Idaho, Oreg.); Big pine (Mont.); Longleaved pine (Utah, Nev.); Red pine; Pitch pine; Southern yellow pine; Heavy-wooded pine; (Eng.); Western pitch pine; Heavy pine (Cal.); Foot-hills Yellow pine; Sierra Brownbark pine; Montana Black pine (Cal. lit.); "Gambier Parry's pine" (Eng. lit.).

Sulphite Pulp.
Yield — 1,130 lbs.
Character — Not difficult to pulp; Difficult to bleach, shivey; Very poor strength and color.
Possible uses — Few.

Sulphate Pulp.
Yield — 1,100 lbs.
Character — Fairly easily bleached; Fine, high grade, very strong, and tough fiber.
Possible uses — Same as white spruce.

Mechanical Pulp.
Yield — 2,060 lbs.
Character — Fibers are long, coarse and soft, creamy color and somewhat pitchy.
Possible uses — Where a medium quality of groundwood will answer the purpose.

THE FIRS

ALPINE FIR — *Abies lasiocarpa.* Wt. 21 lbs. Fiber

Range — Rocky Mountain region from Colorado to Montana and Idaho, and westward through northern Oregon and northward to Alaska (latitude 60 degrees.)

Common Names — Sub-Alpine fir (Utah); Balsam (Colo., Utah, Idaho, Oreg.); White fir (Idaho, Mont.); White balsam; Oregon Balsam-tree (Cal.); Pumpkin-tree; Alpine fir; Mountain balsam (mountains of Utah and Idaho); Down-cone Fir (lit.); Downy-cone Sub-Alpine fir (Cal. lit.).

Sulphite Pulp.
Yield — 1,010 lbs.
Character — Easily pulped; Easily bleached; Good strength; Excellent color.
Possible uses — As a substitute for white spruce.

Sulphate Pulp.
Yield — 1,050 lbs.
Character — Excellent strength; Long fiber.
Possible uses — Same as white spruce.

Mechanical Pulp.
Yield — 2,070 lbs.
Character — Fair strength; White fiber.
Possible uses — Same as white spruce.

BALSAM FIR — *Abies balsamea.* Wt. 21 lbs. Fiber 2.7 m.m.

Range — From Newfoundland and Labrador to Hudson Bay and northwestward to Great Bear Lake region, and south to Pennsylvania (and along high mountains to Virginia), Michigan and Minnesota.

Common Names — Balsam fir (N.H., Vt., Mass., R.I., N.Y., Pa., W. Va., Wis., Mich., Minn., Nebr., Ohio, Ont., Eng. cult.); Balsam (Vt., N.H., N.Y.); Canada balsam (N.C.); Balm of Gilead (Del.); Balm of Gilead fir (N.Y., Pa.); Blister pine (W. Va.); Fir pine (W. Va.); Firtree (Vt.); Single spruce (N. Bruns. to Hudson Bay), Silver pine (Hudson Bay); Sapin (Quebec); Cho-koh-tung "Blisters" (N. Y. Indians).

Sulphite Pulp.
Yield — 970 lbs.
Character — Easily pulped; Easily bleached; Good strength; Excellent color.
Possible uses — As a substitute for white spruce.

Sulphate Pulp.
Yield — 1,010 lbs.
Character — High-grade kraft fiber.
Possible uses — Same as white spruce.

Mechanical Pulp.
Yield — 1,910 lbs.
Character — Strong and good color; Good fiber length.
Possible uses — Same as white spruce.

LOWLAND WHITE FIR — *Abies grandis.* Wt. 23 lbs. Fiber 3.2 m.m.

Range — Coast region from Vancouver Island to California (Mendocino County), and from Washington and Oregon to Northern Idaho and Montana.

Common Names — White fir (Cal., Oreg., Idaho); Silver fir (Mont. Idaho); Yellow fir (Mont., Idaho); Oregon white fir (Cal.); Western white fir; Grand or Oregon white fir (Cal. lit.); Great California fir (lit.).

Sulphite Pulp.
Yield — 980 lbs.
Character — Easily pulped; Easily bleached; Fair strength; Excellent color.
Possible uses — As a substitute for white spruce.

Sulphate Pulp.
Yield — 1,140 lbs.
Character — Good strong grade of kraft pulp.
Possible uses — Same as white spruce.

Mechanical Pulp.
Yield — 1,950 lbs.
Character — Good strength, color and fiber.
Possible uses — Same as white spruce.

NOBLE FIR — *Abies nobilis.* Wt. 22 lbs. Fiber .....

Range — Washington (coast mountains in southwestern part of state; Olympic Mountains on Solduc River; from Mount Baker Southward in the

Cascade Mountains to Oregon (Browder Ridge on head waters of McKinzie river in Lane County). Range at present but little known.

Common Names — Red fir (Oreg.); "Larch" (Oreg. lumbermen); Noble fir (Oreg.); Big tree; Feather red fir (Cal. lit.); Noble or Bracted red fir (Cal. lit.); Tuck Tuck (Pacific Indians).

Sulphite Pulp.
Yield — 1,010 lbs.
Character — Easily pulped; Easily bleached; Fair strength; Excellent color.
Possible uses — As a substitute for white spruce.

Sulphate Pulp.
Yield — 1,080 lbs.
Character — Good quality of strong pulp.
Possible uses — As a substitute for white spruce.

Mechanical Pulp.
Yield — 1,920 lbs.
Character — Good color; Very long strong fiber.
Possible uses — Same as white spruce.

RED FIR — *Abies magnifica.* Wt. 23 lbs. Fiber .....

Range — Southern Oregon (Cascade Mts.) and California (Mount Shasta and along the western slopes of Sierra Nevada Mountains.)

Common Names — Red fir (Cal.); California Redbark fir (Cal.); Magnificent fir (Cal. lit.); California red fir (Cal. lit.); Golden fir (Cal. lit.).

Sulphite Pulp.
Yield — 1,080 lbs.
Character — Easily pulped; A little hard to bleach; Good strength; Fair color.
Possible uses — As a substitute for white spruce.

Sulphate Pulp.
Yield — 1,150 lbs.
Character — Good strong fiber.
Possible uses — Same as white spruce.

Mechanical Pulp.
Yield — 1,915 lbs.
Character — Fair strength; Pinkish color.
Possible uses — As a substitute for white spruce.

SILVER FIR — *Abies amabilis.* Wt. 22 lbs. Fiber

Range — From British Columbia (Fraser river and southward in the Cascade mountains) to Washington and Oregon.

Common Names — Red fir; Red silver fir (Western mountains) Fir (Cal.); Lovely fir (Cal. lit.); Lovely red fir (Cal. lit.); Amabilis or Lovely fir (Cal. lit.); "Larch" (Oreg. Lumbermen.).

Sulphite Pulp.
Yield — 1,060 lbs.
Character — Easily pulped; Easily bleached; Fair strength; Excellent color.
Possible uses — As a substitute for white spruce.

Sulphate Pulp.
Yield — 1,100 lbs.
Character — Excellent strength; Long fiber.
Possible uses — Same as white spruce.

Mechanical Pulp.
Yield — 1,870 lbs.
Character — Long fiber of excellent strength; Color slightly grayish.
Possible uses — Same as white spruce.

WHITE FIR — *Abies concolor.* Wt. 22 lbs. Fiber 3.5 m.m.

Range — Oregon (Siskiyou mountains to southern California (San Bernadino County); Northern Arizona and New Mexico to Colorado and Utah (Wasatch mountains).

Common Names — White fir (Cal., Idaho, Utah, Colo.); Balsam fir (Cal. Idaho, Colo.); Silver fir (Cal.); Balsam (Cal.); White Balsam (Utah); Bastard pine (Utah); Balsam-tree (Idaho); Black gum (Utah); California white fir (Cal.); Colorado white fir (Cal. lit.); Concolor silver fir (Eng. lit.).

Sulphite Pulp.
Yield — 950 lbs.
Character — Easily pulped; Easily bleached; Good strength; Good color.
Possible uses — As a substitute for white spruce.

Sulphate Pulp.
Yield — 1,100 lbs.
Character — Good strong grade of kraft pulp.
Possible uses — Same as white spruce.

Mechanical Pulp.
Yield — 2,010 lbs.
Character — Fair strength; Good fiber; Satisfactory color.
Possible uses — Same as white spruce.

DOUGLAS FIR — *Pseudotsuga taxifolia.*
Washington and Oregon, Wt. 28 lbs. Fiber 4.4 m.m. Montana and Wyoming, Wt. 25 lbs. Fiber—

Range — From the Rocky Mountain region (in United States) and northward to central British Columbia; Pacific Coast.

Common Names — Red fir (Oreg., Wash., Idaho, Utah, Mont., Colo.); Douglas Spruce (Cal., Colo., Mont.); Douglas fir (Utah, Oreg., Colo.); Yellow fir (Oreg., Mont., Idaho, Wash.); Spruce (Mont.); Fir (Mont.); Oregon pine (Cal., Wash., Oreg.); Red pine (Utah, Idaho, Colo.); Puget Sound pine (Wash.); Douglas-tree; Cork-barked Douglas spruce.

Sulphite Pulp.
Yield — 1,200 lbs.
Character — Hard to pulp; Difficult to bleach; Fair strength; Poor color; Pitchy.
Possible uses — Few.

Sulphate Pulp.
Yield — 1,170 lbs.
Character — Good grade of kraft pulp but not as strong as white spruce.
Possible uses — Similar to white spruce.

Mechanical Pulp.
Because of high pitch content is probably unsuitable for this purpose.

(To be continued)

WILL DEAL IN PULPWOOD

The Atlantic Pulpwood Co., Ltd., was recently incorporated under the Companies' Act of the province of New Brunswick, for the purpose of carrying on business in pulpwood and timber lines.

The company proposes to handle cargo as well as rail shipment wood, and has its head office in St. John and a branch office at Annapolis Royal.

Woodlands Section

The Tour of the Foresters

The visiting foresters from every continent, attending the British Empire Forestry Conference are beginning to realize that Canada is a large place. They have been constantly on the move since July 25 and have not yet seen all of Quebec and New Brunswick. The Prairie Provinces, Ontario, and British Columbia are yet to be visited.

The Conference opened in Ottawa on July 25, with an address of welcome from the Premier and a message of commendation and inspiration from the Prince of Wales. The next day the party went to Montreal, where a committee of the Canadian Pulp & Paper Association arranged for visits to the Trust Products Laboratories, McGill University, Mount Royal Park, and Macdonald College. A complimentary luncheon was served at the Ritz-Carlton Hotel.

Grand-Mere, with its beautiful town site and interesting paper mills and reforestation developments of the Laurentide Company was seen on the 27th. From there the party journeyed in their special train to the Lake St. John country. Here, as guests of Price Bros. & Co. the visitors saw the great power development at Grand Decharge and the paper mills at Kenogami and motored to St. Alphonse to embark on the steamer Richelieu for the beautiful journey down the majestic Saguenay to Quebec. On Monday they went by train to New Brunswick and were met at the border by Premier Veniot. Major-General Lord Lovat, the head of the Conference, and Sir James Calder, C. B. E., indulged in a bit of salmon fishing and succeeded in landing 8 real fish, which supplied the party with breakfast. A stop was made at Campbellton and a banquet was served at Bathurst, where the delegates visited pulp and lumber mills before proceeding to Chatham and Newcastle.

Arrival in St. John was on August 1 in the morning. D. E. Lauderburn of the Pejepscot Pulp and Paper Company of Salmon River. N. B. arranged a trip by automobiles to the headquarters of the company at Salmon River. The special train left St. John August 2, for Quebec City making short stops at Fredericton and Grand Falls.

Friday is to be spent in the interesting and historic city of Quebec, and Saturday at the Provincial nurseries at Berthierville. Saturday afternoon and Sunday are free for the delegates to choose their own programs.

Next week will be spent in Ottawa, with the following general program:

BUSINESS MEETINGS IN OTTAWA
August 6th and 7th
Auditorium: Victoria Memorial Museum
Morning Session

Monday, August 6th—
10.00 a.m.—
Procedure.
10.30 a.m.—
Chairman's address.
11.00 a.m.—
Forest Policy — Introductory discussion
12.00 m.—
Resolutions of 1920 Conference: Progress report.
12.30 p.m.—
Adjourn for luncheon.

Afternoon Session

2.30 p.m.—
"World's Softwood Supply."
5.00 p.m.—
Debate to be adjourned until August 11th.

Tuesday, August 7th—Silviculture.
Morning Session
10.00 a.m.—
Natural Regeneration.
11.30 a.m.—
Artificial Regeneration.
12.30 p.m.—
Adjourn for luncheon.

Afternoon Session

2.30 p.m.—
Artificial Regeneration.
3.00 p.m.
General discussion natural and artificial regeneration.
5.00 p.m.—
Adjourn.
Tour to Petawawa Forest Experiment Station

Tuesday, August 7th—
11.40 p.m.—
Leave Ottawa. Board cars at 10.00 p.m., if desired.

Wednesday, August 8th—
4.40 a.m.—
Arrive Chalk River. Remain in cars till 8.00 a.m. The details for this day will be provided in a separate program. "Sample Plot Methods" will be discussed at an appropriate time. Also a beginning will be made in discussion of "Silvicultural Research and Experiment."
12.50 a.m.—
Leave Chalk River.

Thursday, August 9th—
5.00 a.m.—
Arrive Ottawa, Remain in cars until 7.30 a.m.
Morning Session
10.00 a.m.—
Forest Fire Protection
12.30 p.m.—
Adjourn for luncheon.

Afternoon Session

2.30 p.m.—
Fire Protection.
3.30 p.m.—
Forest Entomology and Pathology.
5.00 p.m.—
Adjourn.

Friday, August 10th

Morning Session

10.00 a.m.—
Trade in forest products.

1.00 p.m.
The Conference will be entertained at luncheon by the Ottawa Valley lumbermen.

Afternoon Session

2.30 p.m.—
Forest Products Research.

5.00 p.m.—
Adjourn.

Saturday, August 11th—

10.00 a.m.—
"World's Softwood Supply"—the debate will be resumed.

11.15 a.m.—
"Hardwoods."

1.00 p.m.—
Adjourn.
Afternoon to be devoted to entertainment.

7.30 p.m.—
Official Banquet, Chateau Laurier.

LIST OF DELEGATES

Note:—The list of delegates, honorary delegates, and associates, is, through unavoidable circumstances, incomplete. Those whose names are denoted by an asterisk attended the Conference held in London, England, 1920.

United Kingdom—

* Major-General Lord Lovat, K.T., K.C.M.G., D.S.O. &c., Chairman, Forestry Commission.
*Mr. R. L. Robinson, O.B.E., B.A. B.Sc., Commissioner, Forestry Commission.
*Dr. A. W. Borthwick, Forestry Commission.
*Mr. Fraser Story, Forestry Commission.
*Dr. J. W. Munro, Forestry Commission.
*Professor R. S. Troup, C.I.E., Oxford University.
Sir James Calder, C.B.E.

British Empire Forestry Association—

*Lieut.-Colonel G. L. Courthope, M.P., Chairman of the Association.

Australia—

Mr. Owen Jones, B.A., Chairman, Forests Commission of Victoria.

India—

Mr. W. A. Robertson, Deputy Conservator, Burma, India.
Mr. C. G. Trevor, Officiating Conservator, United Provinces, India.

Ireland—

*Mr. A. C. Forbes, O.B.E., Forestry Branch, Department of Agriculture, Dublin.

New Zealand—

Captain L. McIntosh Ellis, B.Sc.F., Director of State Forests.

South Africa—

*Mr. C. E. Legat, Chief Conservator of Forests.
Mr. W. S. Johnstone, Associated Chambers of Commerce.

Crown Colonies—

Colonial Office—
Major R. D. Furse, D.S.O., Assistant Private Secretary.
Nigeria.
Mr. J. R. Ainslie, Senior Conservator of Forests.
Kenya.
*Mr. E. Battiscombe, Conservator of Forests.
Ceylon.
Mr R. White, Deputy Conservator of Forests.
Straits Settlements and Federated Malay States—
*Mr. C. E. S. Cubitt, Conservator of Forests.
British Guiana—
Mr. L. S. Hohenkerk, Forest Officer.

Canada—

Dominion—
*Mr. E. H. Finlayson, B.Sc.F., Acting Director of Forestry.
Mr. D. Roy Cameron, B.Sc.F., Dominion Forest Service.
British Columbia—
Mr. P. Z. Caverhill, B.S.F., Chief Forester, Provincial Forest Service.
New Brunswick—
Mr. G. H. Prince, B.S.F., Chief Forester, Provincial Forest Service.
Nova Scotia—
Mr. J. A. Knight, Commissioner of Forests and Game.
Ontario—
Mr. E. J. Zavitz, M.S.F., Provincial Forester.
Quebec—
Mr. G. C. Piché, M.F., Chief of Forest Service.

HONORARY DELEGATES

*Mr. A. Bedard, M.F., Assistant Chief of Forest Service, Quebec, Dean of Laval Forest School.
*Mr. Robson Black, Manager, Canadian Forestry Association.
Mr. W. C. Cain, Deuty Minister of Lands and Forest. Ontario.
Mr. Roland D. Craig, B.S.A., F.E., Forest Resources Specialist, Dominion Forest Service.
*Mr. M. A. Grainger, President, Canadian Society of Forest Engineers.
Dr. C. D. Howe, Dean Faculty of Forestry, University of Toronto; Vice-President, Canadian Forestry Association.
*Mr. Clyde Leavitt, M.Sc.F., Chief Fire Inspector. Board of Railway Commissioners, Canada.
Lieut.-Colonel T. G. Loggie, Deputy Minister of Lands and Mines, New Brunswick.
Mr. G. R. Naden, Deputy Minister of Lands, British Columbia.
The Earl of Stafford, England.
*Mr. Ellwood Wilson, Chief, Forestry Department. Laurentide Paper Company.

OFFICERS OF THE CONFERENCE

CHAIRMAN

Major-General Lord Lovat, K.T., K.C.M.G., D.S.O. Chairman, Imperial Forestry Commission.

MANAGER

E. H. Finlayson, B.Sc. F., A.M.E.I.C., Acting Director of Forestry, Department of the Interior, Canada.

SECRETARY

Roland D. Craig, B.S.A., F.E., Forest Resources Specialist, Dominion Forestry Branch, Department of the Interior.

CONCERNED ABOUT STUMPAGE TARIFF

An important delegation of timber limit holders waited on the provincial Cabinet at Quebec last Wednesday, to urge the maintenance of the 1918 tariff of stumpage dues.

Among those present were: Sir Henry Egan, Hon. Geo. Bryson, Brig-Gen. White, Messrs Gerard Power, Dan McLaughlin, John Black, E. A. Dunlop, M. Small, M. Holmes, D. C. Champoux, R. F. Grant, F. Faure, G. E Gillis, W. Grant, Jack Price, F. Hall, R. O. Sweezey, J. Hamilton, J. W. Smith, S. J. Fisher, John Power, H. Nesbitt, Paul G. Owen, secretary of the Limit Holders' Association, A. Seabourn.

It was represented to the Cabinet that last year the enforcement of the 1920 tariff had been delayed for another year, on the conditions that lumber camps would be operated in full swing, which had been done with the result that there had been unusual activity recorded. The lumbermen had at the time taken a risk, but had kept to their promise, and even now camps were still scenes of great activity The result was that after undertaking these risks the limit holders were now menaced once more of falling under the 1920 tariff of stumpage dues, which was over 20 per cent. above the present one. Conditions had only slightly improved, it was pointed out, and the rise in the wages contributed to a great extent in warranting the limit holders to ask for the continuance of the 1918 tariff.

Premier Taschereau and the other ministers present decided to study the matter today and the limit holders will be given an answer later.

NEW MINISTER OF LANDS AND FORESTS

Hon. James Lyons, of Sault Ste. Marie, who is the new Minister of Lands and Forests, has entered upon his new duties in the new Ontario Government, succeeding Hon. Beniah Bowman. Mr. Lyons is widely known in the north and is well acquainted with the interests of the settlers in the lumbering and pulpwood arena. He recently retired as President of the Saut Ste. Marie Board of Trade and advocates that an embargo be placed on the export of hard woods from Ontario, the supply of which is rapidly diminishing.

DIAMOND STATE FIBRE CO. OF CANADA IS THE NAME

On page 750 of our issue of last week at the conclusion of the Article entitled "Fibre, its qualities and use" an error was made in acknowledging the loan of the cuts used to illustrate the article. We expressed ourselves as being indebted to the Dominion State Fibre Co. whereas, obviously, the intention was to credit the well-known Diamond State Fibre Co. of Canada Ltd.

Worthington Pump and Machinery Corporation have put on the market recently a new type of deep well pump, which uses one or more impellers much like a ship's propeller to elevate the water or other liquid. The efficiency, capacity and operating economy of this new pump are said to be far in advance of any deep-well pump now in use.

Look your difficulties in the face, and they will begin to run.

CAN ANY PAPER MILL IN THE WORLD BEAT THIS?

The crew of No. 5 paper machine of the Belgo Canadian Paper Company Limited at Shawinigan Falls, Quebec, claims to have the world's record for a single day's production of newsprint paper. This, of course, means the world's record for any grade of paper, and their figure, which was reached last week, was 96.11 tons. Mr. Maurice Neilson under whose superintendency the above record was made on the machine recently supplied the Company by Charles Walmsley Company Limited, and driven by the Harland Interlock Electric Drive is certainly to be congratulated on this excellent performance. We doubt if any paper mill can claim to produce more paper on one machine, but the boys who ran the Belgo machine stated that if this claim is disputed, they will push it up higher and have in mind eventually making 100 tons at least on this machine.

INSTALLING "TREMOR" SCREENS

The Watford Engineering Works, Ltd, of Lower High Street, Watford have received an order from the Empire Paper Mills, Greenhithe, Kent for their large size No. 3, outward flow "TREMOR" stainers for the new large paper machine being installed in their mill by Messrs Charles Walmsley & Co. Ltd., Bury, Lancashire.

The engineers of Watford Engineering Works have also introduced a new flat strainer working upon the "TREMOR" system to supersede the jog knotters as auxiliaries to machine strainers and other purposes.

In the new strainer the plate frame is suspended in a Vat carried by a shaft fitted with the "TREMOR" motion, which latter gives a vertical rise and fall to the plates over the whole area, thus eliminating the dead ends of the plates near the fulcrum as was the case in the old jog knotter — by this means a given plate area is approximately twice as efficient as formerly, owing to the whole surface of the plates having the same movement. The motion is obtained in the same manner as their "TREMOR" strainers, so is perfectly silent and effective.

The strainer is also being adapted as a small inward flow for use in hand mills and for very small outputs. In this instance the pulp is passed the reverse way, viz: from the underside to the top side of the plates. No joint is required and the floating rubber and rubber solution is easily skimmed off the surface of the stuff as it floats before passing through the Plates.

The plates for the inward flow machine are made basket shape to more readily allow any refuse to rise to the surface before passing through the slits.

Recognizing the favorable and the unfavorable factors in the situation, the outlook is for good business for the remainder of 1923 and expectation of its continuance into 1924, according to the monthly bulletin of the National Bank of Commerce, New York.

No man ever wakes up to find himself famous. The truth is he hasn't been asleep.

Technical Section

REVIEW OF RECENT LITERATURE

RAW MATERIALS

A-7 The Sulphur Industry of the United States. ALBERT G. WOLF. **Pulp & Paper,** International No., 153-157 (Dec. 1922). An outline of the development of the U.S. sulphur industry and of its present status.-A.P.-C.

SCREENING AND DEWATERING

G-8-9 The Kamyr Pulp Press Machine. O. L. BERGER. **Paper Trade J.** 75, No. 26, 51-2 (Dec. 28, 1922); **Paper** 31, No. 9, 14-15 (Dec. 20, 1922); **Paper Mill** 45, No. 52, 18 (Dec. 30, 1922). In its complete form it consists of a suction cylinder mold with vacuum pump, two pair of corrugated presses, and a pulp cutter. The pulp leaves the mold testing 22 to 24% air dry. The first press brings this up to 40% and the second press up to 55% air dry. The high test of pulp leaving the mold in connection with the special construction of the grooved and corrugated presses make it possible to run through the presses without the use of felts. Compare U.S.A. patent 1,387,954 and Can. patent 219,484; **Pulp and Paper** 20, 655 (Aug. 3, 1922); **Paper Trade J.** 75, No. 7, 56 (Aug. 17, 1922). Also Can. patent 219,279; **Pulp & Paper** 20, 794 (Sept. 14, 1923); **Paper Trade J.** 75, No. 12, 51 (Sept. 21, 1922).-A.P.-C.

G-6 K-11 Water Supplying Device for Flat Screens. A. H. BORRESEN and K. HOLTER. Can. pat. 228,775, Feb. 20, 1923. The water is supplied through a longitudinal slot located substantially in the screening plane and directing the current of water along the surface of the screening plates in the direction of flow of the pulp. It is thus supplied below the layer of pulp, instead of from above, and exerts the best possible feeding and diluting effect on the pulp.-A.P.-C.

K-12 Application of Steam Traps To Paper Machine Driers. L. D. Goff. **Paper Ind.** 4, 1719, 1721, 1723 (Mar. 1923); **Pulp & Paper** 21, 457-458 (May 3, 1923). A discussion of the merits of the Armstrong steam trap in ensuring proper steam circulation and temperature gradation in paper machine driers. — A.P.-C.

SPECIAL PAPERS

K-23 Use of Starch Products in Making Colored Lines on Marbled, Glazed and Calendered Papers, and Card Board. RINGE & CO. Ger. pat. 369,470. **Papierfabr.** 21, 131 (Mar. 4, 1923). The color is mixed with starch products to which is added ferrous sulphate in solution. The resulting paper can be written on with ink.-J.L.P.

K-23. Insulating Paper. Fusaichi Tagawa. Jpn. pat. 39,173, July 7, 1921. Paper is passed through a paste prepared by mixing together a solution of 100 parts of globulin and 10 parts of borax in 500 parts of water, a solution of 70 parts of shellac and 14 parts of borax in 500 of water, and 60 parts of saturated lime water. The sheets are piled to suitable thickness pressed with a hot hydraulic press, and calendered. — A. P.-C.

K-23 The Manufacture Of Paper For Wrapping And Containing Foodstuffs. James Strachan. **Paper Mill** 47, No. 19, 34, 46 (May 12, 1923). A description of the qualities required of various classes of paper for holding and for carrying foodstuffs. — A. P.-C.

K-23 Paper With A Rough, Fibrous Surface. J. W. Zanders. Ger. pat. 371,506. **Papierfabr.** 21, 210-211 (Apr. 15, 1923). A soft paper, with good felting, is covered on both sides with tough, hard paper by means of an adhesive and dried. The sheet is then split in the middle. — J. L. P.

K-23 Wax Paper For Packing Hygroscopic Tablets. W. Grunewald. **Zellstoff U. Papier** 4, 87-88 (Apr. 1923). Hydroscopic medicinal tablets, containing hexamethylenetetramine and theobromine, absorbed only 1.4% moisture, after a day exposure in an atmosphere containing 100% relative humidity, when wrapped in paper which had been treated with aluminum acetate and aluminum soap and afterwards treated with glue, gum arabic, or dextrine. — J. L. P.

K-23. Safety Paper. V. E. Goddman assignor to Waterlow & Sons Ltd. U. S. pat. 1,417,820 May 30, 1922. A black or dark surfaced paper is coated with an opaque but light-colored composition such as a composition containing manganese ferrocyanide which is sensitive to chemical eradicators. — A. P.-C.

K-23. Treatment of Japanese Paper. Masayoshi Ishii. Jpn. pat. 39,541, Aug. 16, 1921. A strong and waterproof paper is manufactured by treating thin Japanese paper with a solution of 375 g. of **Chondrus collatus,** 18.8 g. of flowers of zinc, 75 g. of wood pulp in 9 liters of water, and then rolling through hot rollers.—A. P.-C.

K-23. Asbestos Paper. N. Sulzberger. Eng. pat. 186,-409, June 24, 1921. Pure asbestos paper (containing no organic binder) is made by drying a pulp containing 50 parts of long fibered asbestos and 6 parts of a colloidal solution of aluminum silicate prepared with the aid of tannic acid and ammonia. Alternatively asbestos sheets containing an organic binder and preferably an oxidizing agent such as sodium nitrate or nitrocellulose, are heated at a temperature sufficient to destroy the organic binder. Asbestos material prepared by this process is suitable for cigarette wrappers, insulating materials, and carriers for catalysts.—A. P.-C.

K-23. Metal-Coated Paper. K. Wickel. Eng. pat. 183,-143, July 17, 1922. In the preparation of metal-coated or metallized paper impermeable to water, oil and air, and suitable for packing food or as a substitute for gold leaf, bituminous substances are employed as a binder, the bituminous substance, such as "vulkabitumen," may be employed in the melted condition: or it may be dissolved in hydrocarbons, carbon tetrachloride, or similar solvents, and the powdered metal (bronze) may be mixed with the solution and applied by rollers, brushes, or scrapers, or by atomizers; or the dry process may be used. The product may be made pliable or stiff according to the hardness of the bitumen used.—A. P.-C.

K-23 A Study Of The Experimental Manufacture Of Condenser Paper. Merle B. Shaw and George W. Bicking, U. S. Bureau of Standards. **Paper Ind.** 5, 309-311 (May 1923). After a brief description of the use and requirements of condenser papers, the authors describe tests carried out with the experimental paper making equipment at the Bureau of Standards, on the results of which they base the following recommendations: New cotton and linen cuttings, carefully cut and dusted, should be used raw in the beater. In cutting and dusting a self-cleaning magnet roll to remove metal and conducting particles could be used to advantage. Filtered water should be used and handled in pipes of non-corroding material. Pumps handling stock and water should be of a non-corroding material. The beater should have a stone or cement and quartz roll and bedplate. In the sand trap there should be a self-cleaning magnet roll to serve as a last precaution. If a fourdriner machine is used the wire should not be coarser than 90 mesh and a pickup felt around the upper couch roll is desirable. If a cylinder machine is used care must be taken to obtain a well-formed sheet free from pin holes. A supercalender stack may be necessary to reduce the thickness and to give denseness to the paper. — A. P.-C.

ARTICLES OF PAPER

L-4. Oilproof Coating. A. J. Rowland. U. S. pat. 1,395,016, Oct. 25, 1921. An oil-proof composition adapted for coating and impregnating paper receptacles is formed of 40 per cent. of zinc or aluminum salts of alginic acid and 60 per cent of 26 deg. Be. ammonia. — A. P.-C.

L-4. Oil and Grease-Proof Paper Container. T. M. Godfrey, U. S. pt. 1,395,272, Nov. 1, 1921. Successive interior coatings of (1) glycerol, water and casein and (2) glycerol water and a water-soluble adhesive such as gelatine or gum arabic, which serves to mask any objectionable odor of the casein, are applied. — A. P.-C.

L-5. Waterproofring Vulcanized Fiber. J. McIntosh. U. S. pat. 1,425,878, Aug. 15, 1922. Wet vulcanized fiber is immersed in a waterproofing liquid such as oil or asphalt until it has become thoroughly impregnated and it is then dried to free it of water. — A. P.-C.

L-6. Solidifying Fibrous Pulp. E. Nishina. Eng. pat. 185,399, Aug. 4, 1922. Fibrous pulp mixed with adhesive material is solidified in thin film by projecting it under high pressure from spouts on to a slowly moving surface of gauze, felt, etc. After drying, the material is removed from the surface and calendered on rolls or pressed into molds. Alternatively, the pulp may be left adhering to the surface, which then serves as a reinforcement. The process is suitable for making material such as pasteboard, papier mâchè, artificial leather, belting, linoleum and flooring. — A.P.-C.

L-7. Treating Paper for Spinning. E. Fues. Eng. pat. 187,987, Oct. 28, 1922. Parchment paper is rendered suitable for spinning into threads, etc., by treating it with solutions of aluminum sulphate and formaldehyde and then drying it quickly on rolls at 100 deg. C.; the treated paper is prevented from subsequently becoming brittle by drying it at a lower temperature, e.g., 60 deg. to 85 deg. C., for a longer period, and then for a short period at a higher temperature. The quantity of acid substances used may also be reduced, e.g., to less than 1 per cent. of aluminum sulphate by weight of dry paper, in which case the paper can be dried quickly at 100 deg. C., without subsequent cracking. The percentage of formaldehyde used may be increased and substances such as benzoic and salicylic acids may be added to give a disinfectant action. — A. P.-C.

DRYING

M-7 Heat Transference in the Ventilation of Machine Rooms. J. O. Ross. **Paper Trade J.** 76, No. 15, 167-169 (Apr.12, 1923); **Paper** 31, No. 26, 69-72 (Apr. 18. 1923); **Paper Mill** 47, No. 16, 16, 18, 36 (Apr. 21, 1923); **Paper Ind.** 5, 334-336 (May 1923). An outline of the evolution of machine room ventilation, showing the importance of proper ventilation on quantity of output and quality of finished product, and emphasizing the great savings which can be effected by recovering the heat from the moisture-laden warm air from the machines. There are at present two methods of doing this: by heating the incoming air by means of a Briner economizer or by heating water directly by passing the vapor through a water spray. — A.P.-C.

THE ENGINEERING OF EXCAVATION, By George B. Massey. — John Wiley and Sons, New York, and Renouf Publishing Company, Montreal. — 376 pages, illustrated.

The problems of excavation are common to many branches of engineering and are treated of incidentally in numerous text-books and other volumes. Here, however, the author has drawn upon an experience of more than twenty years specialized in excavation work to give the subject comprehensive treatment. The result is one of the growing number of special treatises useful for reference. The author states specifically that his object is to help the engineer to choose the most suitable machinery for the work he has in hand.

Commencing with revolving shovels, the land types of excavators are described, the principles upon which they operate, and their special applications. A number of the newer types mounted upon caterpillars are included. Ditchers and "dry land dredges" are treated of fully. The various accessories such as buckets, engines, pumps, drills and the means of transportation, are treated separately. A chapter is devoted to hydraulic work and hydraulic lifts. Dredges for the purposes of excavation and for placer mining are described comprehensively. While this book could not be used effectively as a text for teaching, and while its nature might make it difficult of comprehension to the young engineer, it will form a very useful work of reference for the engineer with whom excavation is an occasional, but necessary, employment.

THE ACTION OF THE BEATER

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Satan has many tools, but a lie is a handle that fits them all.

SULPHUR CONSUMPTION IN THE MANUFACTURE OF SULPHITE PULP

By W. G. MacNAUGHTON

Secretary-Treasurer, Technical Association of the Pulp and Paper Industry

In practice the quantity of sulphur used per ton of product is usually regarded as an index of efficiency in the operation of a sulphite mill.

In "Manufacture of Pulp and Paper," Dr. Johnsen, author of the chapter on Sulphite, says: "There is great variation in the amount of sulphur per ton of pulp because this depends a great deal upon the yield in the cooking process and still more upon the efficiency of the acid plant, especially of the recovery system. While it should be possible in commercial operation to produce pulp with 200 pounds of sulphur per ton of pulp continuously, the actual sulphur consumption in pulp practice varies between 220 and 300 pounds per ton of pulp."

This figure confirms the work of Bryant who determined that under the conditions investigated, 184 pounds of sulphur was actually used in producing a ton of sulphite pulp.

Effect of Yield

In considering the effect of yield on sulphur consumption two factors enter, the cellulose content of the wood used and the degree to which the lignin or non-cellulose material is removed in the sulphite process. A third factor also enters, namely the possible loss of fibre between the digesters and the finished product.

As the cellulose content of spruce wood is higher than hemlock, as would be expected the sulphur consumption for spruce sulphite is proportionately lower.

Similarly easy bleaching sulphite having had more of the non-cellulose material removed than in strong grades, would be expected to require a higher sulphur consumption and such is the case.

Apart, however, from the variations due to difference of species and quality of wood used and the resultant yield there is very generally an unnecessary loss of sulphur in some form, either in the acid-making plant or in connection with the recovery system.

Problem of Losses

Losses, that are clearly obvious, are the leakage of gas and acid liquor from defective cooling and distributing pipe lines and tanks. If a sulphite mill has a sulphur consumption much in excess of 250 pounds per ton it should first examine its equipment. If found in perfect condition, gas and liquid tight, the next investigation should be the plant operation.

In the preparation of the acid the first step is the burning of the sulphur. In this, care should be taken to avoid the production of sulphuric acid instead of sulphur dioxide. Generally speaking, this may be done by maintaining uniform combustion conditions with the lowest possible excess of air and using sulphur that is free from moisture.

For best operation, it is necessary to feed the sulphur in melted form and to use either a recording pyrometer or recording gas analyser for control purposes. A combustion chamber has been found necessary between the sulphur burner and cooler if a gas of high SO_2 content is to be produced. As about 21 per cent. is the maximum it has been found in practice that a safe limit is about 18 per cent. when a properly designed combustion chamber is used.

In the absorption towers if SO_2 gas is discharged at the outlet the liquid distribution should be examined as the liquid may be passing down one side of the towers with the gas passing up the other.

In the recovery system high sulphur may be traced to the waste of relief liquor produced during the first part of the digestion, but if the liquor is recovered the relief cooling equipment may be inadequate. As is well known, the relief gas is practically pure SO_2, about six times as strong as the burner gas. For proper recovery ample cooling equipment and cooling water of low temperature is necessary.

In the composition of the cooking acid, it may be pointed out that increased combined results in an increased sulphur consumption.

In the cooking operation where a strong grade is desired, it frequently occurs that the digester is blown at a high test. In doing so, considerable sulphur is lost in the sulphur dioxide held by the digester contents, and thereby may offset the higher yield in terms of sulphur consumption.

PULP AND PAPER SCHOOL TAKING SHAPE

Plans are progressing for the operation of a pulp and paper school in this province, which was provided for at the last session and has been assented to by the Lieutenant-Governor by a recent Order-in-Council, authorizing preliminary steps.

It is learned that the new school, which is to prove such an asset to the pulp and paper mills, will be annexed to the technical school in Three Rivers. This point has been found most suitable for the purpose of the school, being in the centre of the pulp industry of the St. Maurice Valley.

While employed at the large mills in that city employes will have the opportunity of following theoretical and practical courses at the new school.

The forest rangers' school at Berthierville which is part of the curriculum inaugurated by the Government, will be opened in the first week of September.

BOSSES WERE WISE

The heads of a big manufacturing plant had this notice posted at the beginning of the summer season:

NEW RULE FOR OUR EMPLOYES

All requests for leave of absence on account of toothache, severe colds, and minor physical ailments, and on account of church picnics, weddings and funerals and the like, must be handed to the foreman in charge of your department before 10 a.m. on the morning of the game. — Houston.

The Seaman Paper Company has opened a branch office in Indianapolis. John M. Schlenck is district manager and Ben F. Schaufelberger is in charge of the territory adjacent to Indianapolis.

The paper manufacturer's supply business of N. E. Berzen, New York City is now being conducted under the name of S. J. Fischer, Inc. Under a recent reorganization the company's officers are: Nat E. Berzen, president; S. J. Fischer, treasurer and D. A. Fischer, secretary.

PULP AND PAPER NEWS

It is learned that the National Pulp Corporation, Limited, which was recently granted an Ontario charter, with headquarters at Hamilton, Ont., is only as yet in the promotion stage. The object of the company is stated by the solicitors to be the repulping of newspaper and other printed matter and extracting the ink. Judson Culp, of Hamilton, is the promotor and is the owner of a process for de-inking which it is proposed the company will use when it starts operating.

James Currie, of Stirling, Ont., who has spent 63 years with type and press, celebrated his eightieth birthday a few days ago. He entertained the Bay of Quinte Press Association at his home subsequent to their annual meeting when he was congratulated on his vigor by the newspaper men present. Mr. Currie only relinquished the ownership of the Stirling News-Argus three months ago.

R. J. Flynn, sales manager of the Buntin Reid Company, Limited, paper merchants, Toronto, who is also Mayor of Weston, near that city, was recently offered the combined positions of clerk, treasurer, and assessment commissioner of Weston. Mr. Flynn states that while he did not seek the office he was flattered at the offer but it was not likely he would accept it. The salary was $2,500 per year.

The announcement was made last week that the appeal in the case of the Fort Frances Pulp and Paper Company, Limited, vs the Manitoba Free Press Company, Limited, and others, in connection with a claim to recover money paid in excess of prices fixed by the Paper Control Board under the War Measures Act of 1914, had been dismissed with costs by the judicial committee of the Privy Council in London, Eng. The action was brought to recover sums the respondents had paid for paper delivered at control prices. No question was raised concerning the figures, and the trial judge treated the question only as to whether the paper tribunal and paper controller had been validly vested with powers to make the orders in controversy. The Court of Appeal held that it was unnecessary to go into question of the validity. Whether the action of the paper tribunal was legal or not, the Court of Appeal held that the appellants, notwithstanding that they had acted under pressure, had bound themselves to accept the prices fixed. Their lordships of the judicial committee have not been able to satisfy themselves that this view was reliable. The tribunals, they state, had exercised control not only over prices, but over the supply of the paper itself, and were in a position to exercise, and did exercise, pressure that was practically irresistible. They say further: "It is enough to say that there is no clear, unmistakeable evidence that the Government was in error in thinking the necessity was still in existence at the dates on which the action was taken by the paper tribunal. Their lordships find themselves unable to say that the Dominion Government had no reason for temporarily continuing the paper control after the war ceased, but while the effects of the war conditions still might be operative. They therefore are unable to accept the propositions in the powerful argument of the appellants." The appeal was dismissed with costs and the petition by the appellants for leave to adduce further evidence was also dismissed.

The Abitibi Power and Paper Company, Limited, at Iroquois Falls, Ont., is now sending out a train of paper (from 18 to 20 cars) every day of the week excepting Sunday. Now that the company's railroad into its timber limits is running, and with it some thirteen miles of branch lines, the company will be able to effect a number of savings. The railway will make it possible to get wood to the mill all winter thereby rendering unnecessary the storage of a big wood pile, while the logs can be brought to camp more quickly than by former methods of logging.

Many paper men in Ontario learned with sincere regret of the death in Kalamazoo, Mich., of C. A. Beck, a director of the Provincial Paper Mills, Limited, and a stock holder in the Interlake Tissue Mills, Limited. S. F. Duncan, Toronto, secretary of the Provincial Paper Mills Company, attended the funeral on Wednesday of last week.

The first run of sulphite bond paper at the Port Arthur Division of the Provincial Paper Mills, Limited, was made last week. Samples to hand are of excellent quality with good finish and texture. The company report an excellent market for the product throughout Canada.

N. E. Wainwright, Toronto, who is handling the output of the Port Arthur mill of the Provincial Paper Mills, Limited, has returned from a business trip to Port Arthur and Winnipeg.

Lieu.-Col. Thomas Gibson, of Toronto, vice-president of the Spanish River Pulp and Paper Mills, Limited, will attend the Discovery Week celebration at Sault Ste. Marie, Aug 4 to 8. Lieu.-Col. Jones, of the Spanish River Company, is chairman of the general committee in charge of the celebration.

It was with extreme regret that the Ontario paper trade heard of the death at Hamilton, Ohio, of Thomas Beckett, President of the Beckett Paper Company, manufacturers of the famous Buckeye cover paper. Among those who attended the funeral in Hamilton, Ohio, last week was E. B. Munro, of the Wilson, Munro Company, Toronto, who are the Ontario Agents of the Beckett Company.

George Carruthers and President H. F. E. Kent of the Canadian Pulp and Paper Association have returned to Toronto after having attended a meeting of the Council of the Association at Montreal.

W. J. Bell, Vice-President and General Manager of the Spanish River Lumber Company, Sudbury, received the congratulations of many friends in the

lumber and pulpwood industries on the occasion of his birthday on July 29. Mr. Bell was born at Pembroke, Ont., on July 29, 1859.

Many in the paper and printing trades extended birthday congratulations to William Stone, President of Rolph-Clark-Stone, Limited, Toronto, Lithographers etc., on July 8th. Mr. Stone was born in Birmingham, England, on July 8, 1856.

Ritchie & Ramsay, Limited, coated paper manufacturers, Toronto, have been sending out some very attractive direct mail advertising setting forth the merits of their "Luxacoated" porcelain and "Red Seal" coated book. "R and R" coated folder is another line that has been perfected to meet the growing demand for a high grade coated paper that will fold and print well. The body stock is composed of rags and No. 1 bleached sulphite, giving the necessary strength and folding qualities, while particular attention has been given to the coating, in order to produce a resilient sheet that will give the desired results. The firm report a good demand for their products with their mill operating to capacity.

The Summer Number of the Wrightcroft Review, a quarterly house organ put out by Croft & Wright, printers, Toronto, has just been put in the mails. The book is well printed on good stock and in typography as well as in the quality of the trade and general articles the edition ranks well with its predecessors. There is a department devoted to shop talk and there is a half tone reproduction of "After the Bath" which well illustrates the summer idea. The publication is a credit to the firm and to the editor, Robert D. Croft and his assistants.

A deputation from the Brampton Gummed Paper Company, whose plant was badly damaged in the recent windstorm, but which has since been completely restored, waited on the Brampton Town Council last week and asked for a guarantee of bonds amounting to $20,000 for twenty years. In return they offer the town a first mortgage on their factory appraised by the insurance companies at $23,500 and on their plant valued at $35,000. They desire to build an addition to their factory worth $10,000 and would give a first mortgage on the new building. The Council deferred action and in the meantime will investigate the security offered.

According to word from Sault Ste. Marie, Ont., the Algoma Central Railway is carrying about 30 cars of pulpwood per day. The major portion of this is for the Spanish River Pulp and Paper Mills at the Sault, but several cars a day are being taken to Michipicoten to be loaded on boats for transportation to the Port Huron Pulp and Sulphite Company. This company is taking pulpwood from Michipicoten at the rate of a cargo per week. These cargoes run from 600 to 700 cords.

The great and beneficent project begun by Sir William Gage, late head of the W. J. Gage Company, manufacturing stationers, Toronto, 26 years ago, entered on a new stage last week with the formal opening at Gravenhurst, Muskoka, of the main building of the Muskoka Hospital for Comsumptives, which replaces the one destroyed by fire in 1920.

Canadian Vickers, Limited, Montreal, last week launched the first seaplane constructed in this country. It is one of six ordered by the Dominion Government for forest patrol work, and particularly for reporting forest fires. The machine has a carrying capacity for six persons. The wings and propellors are of Sitka spruce, grown in B. C., which wood was used in very large quantities for aeroplanes during the war. The Rolls Royce engines are of 375h. p., and were constructed in England.

The manufacturers of fibre and corrugated shipping cases have made an arrangement with the Shoe Manufacturers' Association of Canada under which standard sizes will be made for shoe manufacturers.

The toilet and tissue section of the Canadian Pulp and Paper Association held a meeting in Ottawa last week.

J. R. Walker and Company, Montreal, have added a paper jobbing department to their paper stock business. This is carried on at their warehouse at 267 Wellington Street, and is under the management of Mr. R. Rolland.

The Interlake Tissue Mills, Limited, have put on the market a new line "Household Towels"; each roll contains 300 towels. As the line implies, the goods are intended for household use, such as in cooking, roughing out pots and pans, polishing glass, absorbing the surplus grease from fried foods, etc. Another new line of toilet tissue is Velvetissue, the rolls of which are in pure white wrappers of coated stock, and also entirely wrapped in pure white crepe tissue, which keeps the paper clean until it reaches the consumer. The White Cross brand of tissue is now wrapped in crepe tissue.

Mr. B. C. Howard, one of the most prominent lumbermen and pulpwood dealers in Eastern Canada, died suddenly in his office at Sherbrooke July 27. He was born at Stanstead in 1865. The firm of B. C. Howard & Co., Ltd., did a large business in pulpwood, and operated limits in Beauce County, P. Q., together with a mill at Lake Frontiere, Montmagny County.

MAY CHANGE — FORESTRY REGULATIONS

A strong sentiment in favour of the elimination of spring and summer slash burning has been created by the recent disastrous forest conflagrations in New Brunswick, many of which have been traced to slash burning sources. Residents of many sections of the province, particularly those most seriously affected by forest fires, are demanding greater precautions in the control of slash burning fires.

As an example of this public sentiment which has been aroused, the Restigouche County Council in semi-annual session recently adopted a resolution in support of the elimination of spring and summer burning and asking the Department of Lands and Mines to take steps in this direction. These demands which are being received from various sources also advocate the supervision of slash burning under qualified persons during periods when the fire hazard is at a minimum in the Fall. Forestry officials have long ago advocated such steps stating that sooner or later the elimination of burning during the period mentioned, would become imperative.

Life is too short to be unhappy in business. If business were not a part of the joy of living, we might almost say that we have no right to live, because it is a pretty poor man who cannot get into the line for which he is fitted.—George Lippincott Brown.

UNITED STATES NOTES

Statistics of paper exports from the United States during the month of May, as reported by the Department of Commerce, were as follows: Newsprint, 2,992,243 pounds, valued at $158,056; uncoated paper, 2,265,249 pounds, valued at $264,673; surface coated paper, 589,863 pounds, valued at $75,994; grease proof and water proof paper, 121,701 pounds, valued at $12,670; kraft wrapping paper, 37,597 pounds valued at $3,354; other wrapping paper, 1,683,761 pounds, valued at $155,832.

Excavations for the erection of a new $1,500,000 paper mill at Bogalusa, La., were begun last week. The mill, when completed, will make wrapping paper and will give steady employment to about 200 men. Thousands of cords of pulp wood will be bought from the farmers of the vicinity. The present plant, including the power station and pulp mill, will be largely improved and enlarged. Salt cake will be made in connection with the operation of the new paper mill.

Forest fires in Pennsylvania this spring did damage estimated at $687,372, according to the Pennsylvania Department of Forests and Waters. Because of the dryness of the weeds the fires were more numerous than in any other year, 2,766 having been reported, and these burning over an area of 2,321,085 acres. Most of these forests were privately owned.

A publication, to be known as the International Paper Monthly, will make its initial appearance next month. The magazine is intended for general circulation among International Paper Company employes. It will be edited by A. G. Slater.

Six thousand girls and other workers employed in New York City paper box factories have declared their intention to strike unless they are granted minimum wages ranging from $22 to $50 a week. The girls also demand recognition of their union with conditions said by employers to be impossble if the industry is to continue. One manufacturer declares he will appeal to the State Industrial Commissioner to adjust the grievance. A strike a few weeks ago in a Long Island City paper box factory was ended by mediation.

Col. Wm. S. Greeley, chief of the United States Bureau of Forestry, has prepared a statement on the national consequences of timber depletion in which he issues the warning that the predicted timber famine has already overtaken the eastern and central sections of the United States Col. Greeley describes "the manifest requirements of the situation," as first: make available timber go as far as it will through reducing waste and improving the efficiency of its use. Second: make progress as rapidly as possible toward a permanent and sustained supply of timber by increasing the growth of woodlands and by putting idle acres to work growing trees. "To sum up." he adds. "the economic and social losses involved in the rapid depletion of the forests of the United States are so large and far reaching as to challenge the attention of our most profound thinkers, to the end that there may be a more comprehensive plan for the elimination of waste in the growth and utilization of forest products and for reforestation."

Senator James Couzens of Michigan sailed for Europe on the Leviathan last Saturday for a two months tour, during which he plans a study of forest conservation and reforestation in Germany and other European countries. The Senator, who is a member of the Senate Committee on Reforestation, said he planned particularly a visit to the Black Forest, where, he understood, conservation work is well established. "The committee will begin hearings in San Francisco September 3," said Mr. Couzens. "I already have gone over the timberlands of the West in the immediate vicinity of this hearing. I think that by making this study abroad I can really be of more service to the committee than by revisiting the Western forests.

Demands for various grades of paper for fall delivery is expected to pick up earlier than usual this year. There are strong indications, according to the American Paper and Pulp Association, that there will be an influx of orders to the mills about the first of September, or a month ahead of the usual time, thus resulting in a renewal early in the fall of the large scale production of the spring. At the present time, the fine paper mills are operating at about 85 percent of capacity while book and wrapping paper manufacturers in many localities are running full. The demand for book papers is described as already increasing.

All previous records in planting forest trees on private land were eclipsed in New York State during the Spring season this year. During the war reforestation fell off perceptibly, but there has since been a recovery and this Spring saw all records surpassed. The addition of trees to be set out in the Fall will undoubtedly bring the total for the year beyond all previous planting operations on both private and public holdings.

Eleven important additions to the forest fire laws of the State of Washington have been made as the result of a bill recently passed by the State's Legislature. Among other things, the bill provides a penalty for the violation of any of the rules and regulations made to protect the forests of the State, and it requires all railroads operatings trains through forested districts to provide speedier patrol. The bill also requires any person operating a stationary engine to clear away forest material from around the setting and to take other specific precautions against the spreading of fire. Under one provision of the bill it becomes a misdemeanor for any person during the closed season to throw away any lighted matches, tobacco, cigars, cigarettes, or any other lighted material in any forest region of the State. Still another provision strikes at the depredations made within recent years on young forest trees for Christmas tree purposes, and provides a penalty for such cutting.

COST ASSOCIATION LITERATURE AVAILABLE

By THOMAS J. BURKE, C.A.

Secretary-Treasurer, Cost Association of the Paper Industry

The following is a list of material which has been forwarded to Members of the Cost Association from time to time. A few extra copies of these articles are available for distribution, to any members of the American Paper and Pulp Association. Requisitions should be forwarded to the Secretary of the Cost Association of the Paper Industry, 18 East 41st Street, New York City, stating the name of article and number of copies desired.

Uniform Cost Systems, E. R. Belt.
Cost Figures that Help you Sell, W. R. Bassett.
Report on Beater Furnish.
Treatment of Overhead when Production is Below Normal, B. C. Williams.
Treatment of Costs during Periods of Varying Volumes of Production.
Executive Use of Cost Systems, R. Dunkerly.
List of Depreciation Rates used by 152 Mills.
Extract from article in "American," by E. N. Hurley.
Need of Close Contact Between Cost and Technical Man, by Fred C. Clark.
Disposition of Trackage Costs in Logging Operations.
Fundamentals for Cost Systems.
Commissioner Gaskill's Letter, Oct. 5, 1921.
The Balance Sheet as the A. & Z. of Costing Systems—by A. Winder.
Fine Paper Costing, L. W. Farrow.
Amortization, by T. W. Dinlocker.
Internal Revenue Bull. on Depreciation, Jan. 9, 1921.
Uniform Accounting Systems Urged for Trade Associations, Prof. Copeland.
The Opportunity of the Cost Accountant to do Analytical Work for the Executive, by Belt.
Relation of Budgetary Control to Cost Accounting—by J. L. McKinsey.
Overhead Distribution Methods, by Brugger.
Report of Committee on Depreciation.
Gaskill's Article on Price Cutting.
Letter and Article on "Cost Audits."
Standard Basis for Comparative Cost Estimates.
Taxation of Capital Gains.
Depreciation Progress Report.
National Standard Invoice Form and Letters.
Manufacturing Efficiency and Com. Conv. Costs, by T. J. Burke.
Federal Tax Bulletin No. 1.
Normal Burden Rates—By C. Van Zandt.
Benefits of Cost Knowledge, by E. R. Spaulding.
Fundamentals in Factory Accounting, by T. Haworth, F. C. W. A.
Memo. Explaining Methods Used in Specimen Cost Forms in Portfolio Submitted to Writing Paper Mfrs. Association, by Writing Cost Committee.
Economics for Executives (Letters).
Profit Insurances (Letters).
Standard Cost Estimate Sheet for Book Manufacturers (Letters.)
Members — Cost Assn. of the Paper Industry (List).
Comparative Conversion Costs (Letters).
Simple Profit and Loss Statement, Designed for Use of Paper and Pulp Mfrs. Whose Cost Records are incomplete.
Essential Cost Records for Woods Operations, by D. C. Crocker.
Report of Spec. Comm. on Standard Unit Wts. of Pulp.
Childs' Finding Steam Losses from Steam Costs."
Articles — "Executive Control Over Steam Costs."
Articles — "Profit and Loss Meters from Steam Plants."
Wall's Article — "Financial Statements."
Carruth's Article — "Methods of Establishing Wage Rates and Determining Promotions."
Working Plans for Standard Costs — by G. Charter Harrison.
Profit Margins, by T. J. Burke.
"What a Cost System" should do for you, U. S. Chamber of Commerce.
Cost Accounting (U. S. C. of C.)
"Overhead Expenses" (U. S. C. of C.)
"Budgeting for Business Control" (U. S. C. of C.)
"Perpetual Inventory or Stores Control" (U. S. C. of C.)
"Practical Application of Cost Work to Management", by B. E. Hutchinson.
"Paper Production Costs, Index to", by Scoville.
"Some Methods used in Obtaining From Mills, Data for use in Distributing Direct and Indirect Expenses to Grades or Lots," by Jas. A. Reilly.

PAPER BUYING ON SPECIFICATION

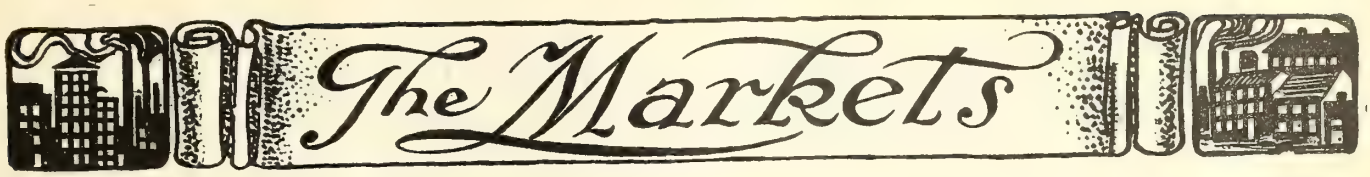
A letter written by W. G. McNaughton, secretary of the Technical Association of the Pulp and Paper Industry on paper buying brings out a difficulty of formulating specifications, as follows:

"Buying paper on written specification is without question a difficult matter. Generally speaking the composition governs the cost and establishes the grade. The criterion of real value, however, is suitability for the particular use to which it is applied. A paper of expensive composition might be entirely unsuitable and practically valueless for some common use. In the last analysis the suitability for the intended use is the deciding factor and this is manifestly difficult to indicate by means of detailed specifications. Even the composition and the usual well known tests are insufficient to cover all the phases of suitability for use. This is particularly true in regard to special writing and printing paper.

"I am inclined to believe that if paper is purchased, of a stated composition found in a satisfactory paper to establish the value, with the added requirement 'to match sample in color, finish and character' with numerical test values where they have a bearing on the suitability for its intended use, it is about as far as one would go."

SHERBROOKE MACHINERY CO. UPHELD

Judgment was recently given in the Exchequer Court of Canada in favor of the Sherbrooke Machinery Company, Limited, against one of its competitors for infringement of its Decker Drive and Spout Patent No. 135,317. The validity of the patent was acknowledged, and infringement by the Defendant was restrained by injunction. The Defendant was further required to pay royalty on the machines already manufactured, and was further restrained by injunction from making, constructing and vending the invention.



CANADIAN TRADE CONDITIONS

Montreal, July 31. — The month which closes today has been a period of quiet trade, due partly to seasonal reasons. Some jobbers have complained of this difficulty of securing orders and also that many of these are very small. Other firms have been more fortunate, but there is no doubt that on the whole, there has been a slackening in activity. At the same time, there is a hopeful note as to fall business. Many are looking forward to quite a revival, and are basing their expectations on a good harvest in the West, together with anticipations of a greater briskness in general commerce.

The newsprint division continues to hold its own. The production figures for the first six months of the year are the best in the history of the industry, reaching 619,802 tons, and with every indication of the demand keeping up, it is more than likely that the last half year will show a greater output, having regard to the fact that other machines will be started. The increased exports in June were entirely due to buying by the U. S. A. British South Africa and New Zealand took more than in June 1922, but against that, the United Kingdom and Australia were out of the market.

Other lines have shown little variation during the week. The paper stock department is fairly good. Rags are in satisfactory request, while waste paper is strengthening.

During June Canadian mills largely increased the exports of book and writing papers. The total of book papers was 798,100 pounds as compared with 121,400 pounds in the corresponding month of 1922. The increase was almost entirely due to exports to Australasia; Australia took 410,900 pounds as compared with 105,000 pounds and New Zealand 382,000 pounds as against 14,200 pounds. For the first half of this year the total was 2,668,500 pounds compared with 312,700 pounds, Australia buying the large amount of 1,813,300 pounds as against 167,200 pounds, while the purchases by New Zealand went from 117,800 pounds to 733,200 pounds. Bonds also show a very satisfactory gain, with a total in June of 234,600 pounds as compared with 831,900 pounds. In this class the distribution is on a broader scale. The United Kingdom took 47,300 pounds compared with nil in 1922, while South Africa and Japan were substantial customers, Australia being the only country to show a decrease. The volume for the six months was 1,311,700 pounds as compared with 343,600 pounds in 1922. The United Kingdom did not buy any Canadian bonds during the first six months of 1922, but this year purchased 125,900 pounds. The chief markets were Australia, New Zealand and Japan, the two first names increasing the purchases by 349,000 pounds; India bought 162,000 pounds.

The imports of book printing paper into Canada in June totalled $42,616. Ontario, British Columbia and Quebec being the leading buyers in the order named. In bonds and ledgers and envelope papers, the value was $10,572 with Manitoba and Ontario the chief purchasers. Ontario was the principal importer of envelopes of a value of $7,636, Quebec coming next with $2,051.

In the pulpwood section, business has fallen away a little. Groundwood is in small supply, with the demand good, at about $36 f.o.b. mill. Kraft is slow, while sulphite is not active. Bleached however, is a fairly good market. In June the United Kingdom was a larger buyer of Canadian groundwood, increasing her imports by over 2,000 tons; the U. S. A. declined a little and France was about stationary. For the six months the exports to the U. K. were 1,700 tons higher, those to the U. S. A. 1,900 up, and those to France 400 tons greater. In bleached sulphite the U. S. A. purchased about 3,000 tons more than in June 1922, and during the half year that country increased her imports by 14,000 tons. The exports of unbleached in June showed little variation, while for the six months the U. S. A., the U. K. and France bought more freely, Japanese purchases declining.

Ontario Markets

There is a distinctly optimistic tone to the Ontario pulp and paper market despite the fact that in some lines of paper business is not as good as it might be. On the other hand some classes of paper which have not been moving freely of late are beginning to show distinct signs of activity. For instance the coating mills report an excellent demand for their product with a far better volume of business than a month ago. One mill in the Toronto district which manufactures coated paper states that they have orders for over a month ahead and the mill is running at capacity. This is in marked contrast to conditions a few weeks ago when few of the paper mills, outside of book and newsprint plants, could boast of advance orders for their products. Although spotty in some lines the paper jobbing trade generally is showing signs of revival while the printing trade is still very quiet and there is considerable competition for orders with more or less price cutting. Most of the jobbers report fairly good business for July although with some the holiday season proved a severe strain. One of Toronto's largest paper distributing houses declared that July yielded an excellent volume of business and that the outlook for fall trade in paper lines was good. On the whole, it would appear as if there were more activity in the distributing end of the business just now than in the manufacturing end, although the reverse of this existed a few weeks ago. Although fairly busy it is stated that many of the mills are working on old orders and that new business is not presenting itself in the same volume as a few weeks ago. There has, however, been an improvement in some lines. For instance wrapping paper and paper bag plants, which have been rather dull, are now picking up nicely and the output is increasing under a steadily improved demand. Bonds, ledgers and writings are still in light demand but the manufacturing envelope trade holds up well and the same may be said of the tissue

and toilet lines, the holiday season having given the usual impetus to the tissue specialty lines. In the tissue department Ontario manufacturers are facing rather keen competition from German, English and Scandinavian sources which have been making a bid for business in this market and this feature of the business has already been under careful consideration by the tissue section of the Canadian Pulp and Paper Association.

TWINE. — Paper houses in Toronto handling twines report a decided improvement in the demand for cotton twine, one firm declaring that their sales of the past two weeks were greater in volume than for two months previously. This may be due to a possible future reduction in price. The fact remains, however, that five bale orders are now beginning to be booked in place of the half bale hand to mouth buying that has characterized the market for some time past. It is believed in the trade that the twine business has reached a definite turn for the better and that the fall is going to produce good business.

NEWSPRINT. — All of the Ontario newsprint plants are operating at capacity with their output practically all contracted for and a good demand from firms not under contract. It is stated that conferences have been held of late at which the question of future prices were considered with the result that it was pretty generally assured that the current export price level of $80.00 per ton would be maintained. That, at least, appears to be the sentiment existing amongst the manufacturers. It is stated that all of the Canadian mills are operating on a satisfactory basis and are able to take advantage of a far greater market on a competitive basis than would be the case were an advance introduced. It seems quite probable that the $80.00 price will hold for some time yet at any rate.

NEW YORK MARKETS

New York, July 28. — (Special Correspondence) — The "dog days" continue to cast their quieting influence over the paper market. The situation at present is quite characteristic of the midsummer season; orders chiefly involve small amounts of paper, jobbers are buying in a cautious manner from mills, and manufacturers for the most part are regulating their production in proportion to current demand. However, prices are not affected by the limited scope of activity. Consumers seem ready to meet the quotations asked for such supplies of paper as they need and producers and jobbers apparently appreciate that lower prices would fail to induce any more buying, so prices are fairly well maintained, with the tendency in a majority of cases in a higher direction. Raw materials have commenced to rise — some sharp advances have occurred in the past few days on certain kinds of raw stock used in the manufacture of paper and board — and it would appear that if any price changes should develop in the near future they will be upward.

Probably the most encouraging feature of the market this week was the increased inquiry from consuming quarters. There was no material broadening of actual demand, but publishers and other users of paper, presumably deeming it opportune and good business judgment to look ahead a little, directed numerous inquiries to dealers and mills regarding forward supplies of paper and board, which seemed to foreshadow heavier buying. There seems little question that a tremendous potential demand for paper of various kinds is being stored up. It is readily admitted that stocks of consumers and jobbers are down to a low point, and just as soon as requirements increase it will be necessary for buyers to go direct to mills to get paper. The first show of larger consumption therefore should be felt almost at once by manufacturers.

Reports from New England tell of many of the fine paper mills in that section remaining closed on account of the strike of stationary firemen. It is understood that practically all of the plants of the largest writing paper producing concerns in the country in and around Holyoke are shut down, partially if not completely, and other mills also are affected. There has been no change noted in quotations on bonds and ledgers, however. Prices rule very firm and there is a rising tendency, as would be expected with production so greatly reduced, but thus far mills have been enabled to fill commitments from stock and have not altered quotations. Demand for fine papers is moderately active. Orders are principally for small lots, but viewed in the aggregate, a good movement of supplies for this time of the year is in progress.

The demand for news print continues active. Publishers are absorbing contract supplies without any let-up, and it is stated that the new contracts entered into this month covering deliveries over the third and fourth quarters of the year call for larger tonnage than were placed at the beginning of 1923 for the first half of the year. Consumption of print paper doubtless was at a record level for the first six months of 1923, and prospects are that in the second half of the year more newsprint will be consumed than in the first half. At the moment there is less paper being used by newspaper publishers, as is invariably the case during midsummer when display advertising falls off somewhat, but this is having no perceptible effect on the market. Mills are reported running at as lively a rate as earlier in the year, and to be readily disposing of their production.

Inquiries for book paper for delivery later in the year are on the increase, and the market displays a firm undertone. Prices have steadied after showing slight declines several weeks ago, and machine finished book is generally quoted at around 6.50 cents per pound f.o.b. New York, with some mills quoting a quarter to a half cent above this figure. Coated book papers are firm at 8 to 11 cents a pound, depending on the quality.

Wrapping paper is in slight demand; that is, domestic manufacturers are experiencing but little demand excepting from converters, owing to the large available supplies of imported kraft wrapping paper. There is, however, a good movement into consuming channels of the imported product; judging from the tremendous amounts of kraft paper coming into the States from foreign sources there must be a wonderfully active market. Tissues also are seasonably quiet but no changes in quoted prices are reported.

Box boards are moving in a routine and steady way. Paper box manufacturers are ordering as their needs arise, and the busy season for paper boxes has not yet arrived, but boards are enjoying a fairly large demand, mills operating four or five days a week and succeeding in finding an outlet for the bulk of their production. Moreover, prices of boards incline higher, especially since costs of waste paper have sharply advanced during the past few days. Plain chip board is

quoted at about $57.50 a ton f.o.b. New York, and news board at $60.

GROUNDWOOD. — Prices of mechanical pulp continue to display a stiffening tone. From all accounts, there is no scarcity of groundwood, yet mill stocks apparently are below normal tonnage and producers are holding unsold pulp with a good deal of firmness, thus creating a firm price situation. Low water is said to be severely handicapping grinders in numerous districts, explaining, of course, why manufacturers are so hesitant about disposing of stocks unless receiving full quoted prices. Around $36 a ton f.o.b. grinding plants is the basis commonly named by domestic producers, and prices substantially above this have been heard in some quarters. Sellers evidently realize that there is every possibility of a scarcity of groundwood developing later in the summer, and they are conserving their supplies to be sure of being able to fill their commitments.

CHEMICAL PULP. — Proof is not lacking that chemical pulp is being purchased in fairly large amounts by paper mills. Some consumers are quite backward in placing orders, presumably figuring that there will be plenty of pulp available should they have need of larger amounts later in the year and that no broad changes in prices are likely to occur, yet other papermakers are looking ahead and are buying pulp reservedly though in comparatively good tonnage. This is assumed on the basis of reports of some fairly large purchases of Scandinavian pulp recently; it being known that paper mills in different parts of the country have placed orders for sizeable lots of sulphite and kraft pulp.

Current demand is principally for unbleached sulphite and kraft. Bleached sulphite is in a quiet market position; there is a routine demand for both foreign and domestic bleached, but consumers are absorbing rather small amounts and it is apparent that importers and domestic producers are granting price concessions to secure business. On the other hand, unbleached sulphite is holding firm in price at about $70 a ton ex dock New York for strong foreign sulphite, while kraft pulp is selling at $67 a ton on the dock for Swedish pulp and at 3.50 cents a pound and higher at pulp mills for No. 1 domestic and Canadian kraft.

Importations have shown a considerable increase of late. This is not unusual at this time of the year, however, since pulp is now being shipped from Sweden against orders placed by paper mills early in the year. It is asserted that importers' stocks on the spot in this country are far lighter than they normally are, particularly of kraft pulp, the statement being made by a leading importer that total stocks of unsold kraft in the U. S. do not exceed 3,000 tons.

RAGS. — The price movement in papermaking rags continues upward and further advances have been scored this week on some kinds of rags. Roofing stock is the strongest class of material at present. Felt paper mills have paid 1.50 cents f.o.b. New York for No. 1 roofing, and 1.35 cents a pound for No. 2 packing, while foreign dark colored cottons have brought 1.50 cents ex dock New York both for spot lots and for forward shipment from Europe. Demand for roofing rags is keen. Certain mills appear to be laying in a supply and are reported gradually advancing their prices. Dealers also place emphasis on the short supply, declaring that rags are not coming in from collection sources in anywhere near normal amounts, which, it is asserted, is a reflection of the shortage of common

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labor and the resultant desertion of the rag business by a great many collectors.

Other grades of rags also are stiffening in price, particularly old whites and blues. Repacked thirds and blues of good quality are fetching 3.25 cents delivered paper mills, while even New York packing of these rags, which is ordinarily of poor quality, is bringing up to 3 cents f.o.b. this city. Miscellaneous thirds and blues are quoted at 2.25 to 2.50 cents per pound at dealers' shipping points, No. 1 miscellaneous whites at 6 cents, No. 1 repacked whites at 7 cents, No. 2 miscellaneous whites at 3.50 cents, and street soiled whites at 2.50 cents. New cuttings are in relatively slow demand, due in part to the shutdown of fine paper mills in New England, but quotations are generally maintained.

PAPER STOCK. — Sharp advances have occurred in prices of old paper. Supported by a better demand from consuming quarters, and by limited supplies owing to smaller collections, the market rules very firm, and dealers are almost daily marking up quotations. Low grades in particular are strong. Most dealers in New York are asking a cent per pound or higher for flat folded news f.o.b. this city, while No. 1 mixed paper is quoted at 90 cents a hundred pounds. Old books and magazines are quoted at 2 cents per pound and higher at shipping points, and ledger stock is practically unobtainable at less than 2.10 cents a pound New York. Old No. 1 kraft paper has advanced to 2.25 cents a pound, and dealers are cautious about booking orders as they say this stock is very nearly unavailable excepting in small quantities. Shavings are held by New York packers at 4.25 cents a pound or more for No. 1 hard white, and around 3.35 cents for No. 1 soft white shavings f.o.b. this city.

OLD ROPE AND BAGGING. — Paper mills are still neglecting old manila rope and purchases of this material are reported at cheaper prices, transactions at less than 5.50 cents a pound f.o.b. New York for No. 1 domestic manila rope having been talked of. Dealers contend, however, that stocks are light and that any increase in demand will result in an immediate strengthening of prices. Old bagging is quiet, with No. 1 scrap bagging quoted at 1.15 to 1.25 cents a pound New York, and roofing bagging at around 90 cents a hundred pounds.

PULPWOOD EXPORTS TO U. S. INCREASING

Ottawa, July 26. — That the prospects of an embargo on exports of pulpwood going into effect has induced the American paper making interests to stock up with wood, is quite evident from the pulp and paper export figures for June, which show that exports of pulpwood to the United States totalled 197,544 cords, or an increase of about 150 per cent. over those of June, 1922. During the three months ending June the total shipments to the United States were 385,511 cords, or 185,000 more than during the same period last year. If the rate of shipment attained throughout the current fiscal year, the total will exceed 2,000,00 cords, as compared with about 1,000,000 in an average year.

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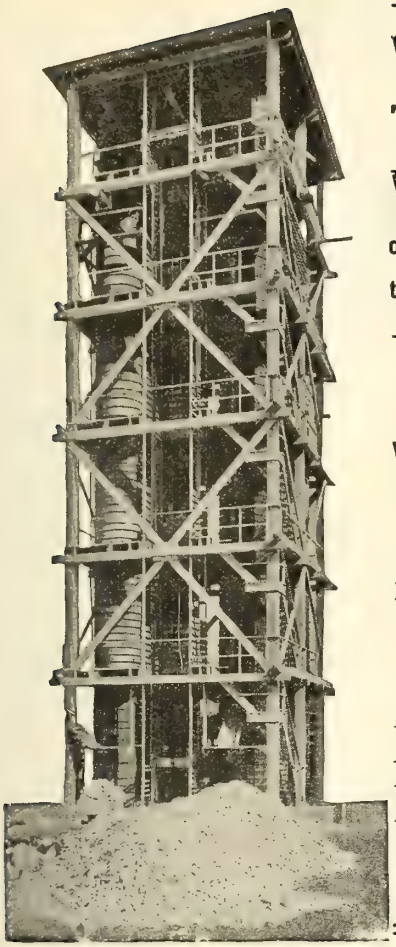
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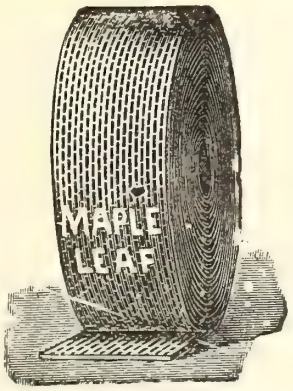
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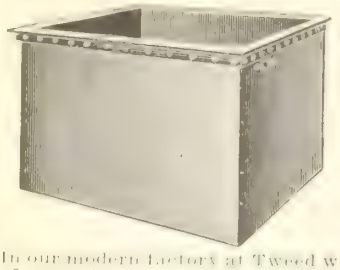
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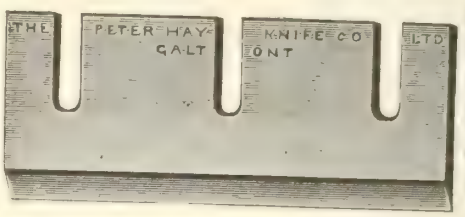
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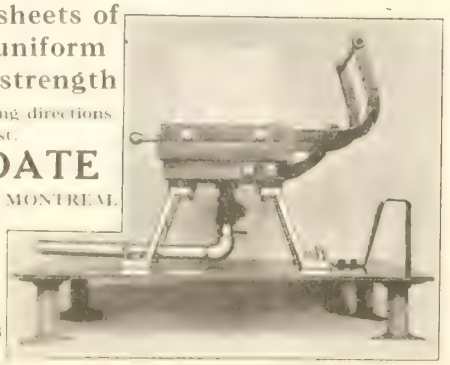
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Buyers who are unable to find in the classification here given such machinery or supplies as they desire are invited to write Service Department, Pulp and Paper Magazine, Gardenvale, Que., who can, in all probability, refer them to proper sources.

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Fuel Economisers:
Sturtevant, B. F. Co., of Canada, Ltd.

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Northern Electric Co., Ltd.

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Beveridge Supply Co. Ltd.

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Diamond State Fibre Co. of Can., Ltd.

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Goold Shapley & Muir Co., Ltd.
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Canadian Fairbanks-Morse Co., Ltd.

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McAvity, T. & Son.

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Can. Link-Belt Co., Ltd.
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Hamilton Co., Ltd., Wm.
Hydraulic Machinery Co., Ltd.
Northern Foundry & Machine Co., Ltd
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The Harland Engineering Co. of Canada, Ltd.
Sturtevant, B. F. & Co. of Canada, Ltd.

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Northern Foundry & Machine Co., Ltd
Port Arthur Shipbuilding Co., Ltd.
Waterous Engine Works, Co., Ltd.

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Lombard & Co.
Miramichi Quarry Co.
Smallwood Stone Co.
Smallwood-Low Stone Co.

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Canadian Ingersoll-Rand Co., Ltd.
Eng. & Machine Works of Can. Ltd.
Northern Foundry & Machine Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Sherbrooke Machinery Co., Ltd.
Walsh Plate & Structural Works, Ltd.
Waterous Engine Works, Co., Ltd.

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Hendrick Manufacturing Co.

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Canadian Link-Belt Co., Ltd.
Goldie & McCulloch Co., Ltd.
Hydraulic Machinery Co., Ltd.
Northern Foundry & Machine Co.
Victoria Foundry, Ltd.
Waterous Engine Works Co., Ltd.

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Heating and Ventilating:
B. F. Sturtevant Co. of Canada, Ltd.
Ross, J. O. Engineering Co.

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Canadian Ingersoll-Rand Co., Ltd.
Can. Link-Belt Co., Ltd.
Gold Shapley & Muir Co., Ltd.
Hamilton, William Co., Ltd.
Northern Crane Works, Ltd.
Victoria Foundry, Ltd.

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Canadian Fairbanks-Morse Co., Ltd.
Taylor, Ltd., H. S.
Williams Apparatus.

Hose:
Voorhees Rubber Mfg. Co. of Canada, Limited.

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Canadian Fairbanks-Morse Co., Ltd.
Norwood Engineering Co.

Hydraulic Presses:
Canadian Fairbanks-Morse Co., Ltd.
Hydraulic Machinery Co., Ltd.
Northern Foundry & Machine Co.
Port Arthur Shipbuilding Co., Ltd.
Waterous Engine Works Co., Ltd.

Instruments—Testing:
The Bristol Co.
Canadian Fairbanks-Morse Co., Ltd.
Northern Electric Co., Ltd.

Insulation:
Can. Johns-Manville Co., Ltd.
Northern Electric Co., Ltd.

Iron Castings:
See **Castings:**

Jordan Castings:
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Port Arthur Shipbuilding Co., Ltd.

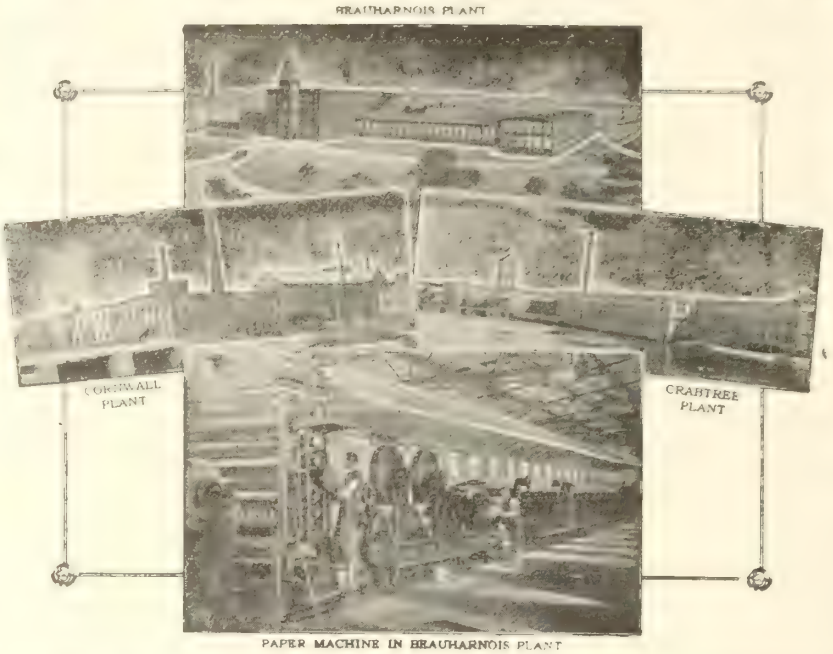
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Reid, C. De Wolf.

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Harland Engineering Co., Ltd.
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Lead Burning:
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St. Lawrence Welding Co.

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McAvity, T. and Son.
Canada Wire & Iron Goods Co.

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Jno. J. Gartshore.
Montreal Locomotive Works, Ltd.

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Lubricating Graphite:
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Dominion Paint Works, Ltd.

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Meters — Gas:
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Harland Engineering Co., Ltd.
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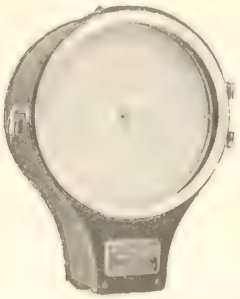
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Sulphite Mitscherlich:
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American Woodpulp Corp.
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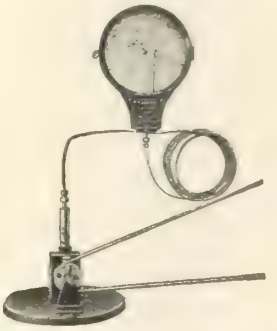
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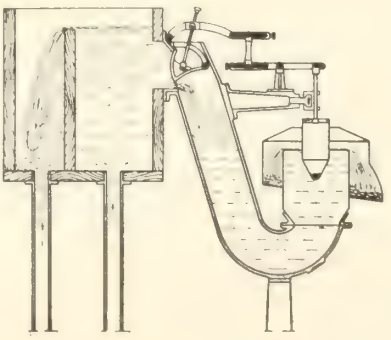
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Victoria Foundry Co., Ltd.
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Weir, Ltd., G. & J.

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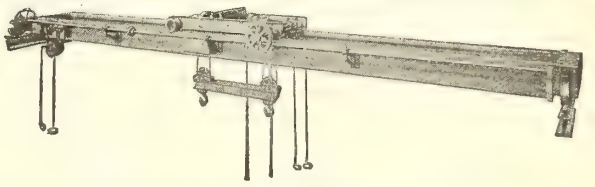
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ALPHABETICAL LIST OF ADVERTISERS

See Classified List on Page 73.

Unpaged advertisements appear in every other issue.

A

Albermé Stone Co., Ltd. ..
Abitibi Power & Paper Co. Ltd. .. 84
Acer, J. H. A. & Co., Ltd. 74
American Voith Contact Co., Inc. ..
American Stone Co. 24
American Woodpulp Corporation .. 24
Ayers, Limited 11

B

Babcock & Wilcox 3
Barrett & Co., Ltd., The .. ..
Barber, W. J. & Co., Ltd. 22
Bathurst Company, Ltd. 82
Bailey Meter Co., Ltd. .. ..
Bates & Innes, Ltd. 25
Bemis Manufacturing Associates .. 30
Bertrams, Limited .. ..
Belgo Paper Co., Ltd., The 82
Beveridge Supply Co., Ltd. .. ..
Black-Clawson Co., The 86
Bolton, John W. & Sons, Inc. 26
Boving, Hydraulic & Engineering .. Company, Ltd. .. ..
Bristol Co., The 80
Brompton Pulp & Paper Co., Ltd. .. 82
Burgess, E. T. .. ..

C

Canada Foundries & Forgings, Ltd. 74
Canada Metal Co., Ltd., The 28
Cameron Machine Co. 87
Canadian Combustion Co., Ltd. .. ..
Canadian Barker Co. .. ..
Canadian Des Moines Steel Co., Ltd. 2
Canadian Elixman Co., Ltd. .. .. ..
Canadian Equipment Co., Ltd. .. ..
Canadian Fairbanks-Morse Co., Ltd. 32
Canadian Ingersoll-Rand Co., Ltd. ..
Canadian Johns-Manville Co., Ltd. .
Canadian Milk Products, Ltd. .. ..
Canadian Nashua Paper Co., Ltd. ..
Canadian Paperboard Co., Ltd. 24
Canadian Pipe Co., Ltd. 21
Canadian Robert Dollar Co., Ltd. ..
Canadian Sirocco Co., Ltd. .. ..
Canadian SKF Co., Ltd. .. ..
Canadian Vegetable Parchment Co., Limited .. ..
Canadian Vickers, Ltd. 7
Canadian Westinghouse Co., Ltd. ..
Capital Wire Cloth & Mfg. Co., Ltd. 26
Carey, Jas. L. 22
Christie, George, Ltd. 80
Clayton, Neil & Jones, Ltd. 12
Combustion Engineering Corporation Limited 5
Crane, Ltd. 17
Crittsinger, Burt Co., Inc. 25
Cleveland Stone Co., The .. ..

D

Date, John 72
Dept. of Lands, Forests & Mines Ontario .. ..
Dodge Mfg. Co. of Canada, Ltd.
Dominion Belting Co., Ltd. 71
Dominion Engineering Works Ltd. 1
Dominion Oxygen Co., Ltd. 10
Donnacona Paper Co., Ltd., The .. 24
Don Valley Paper Co., Ltd. The 24
Dryden Paper Co., Ltd. 24
Dunlop Tire & Rubber .. ..
Dunham, C. A. Co. .. ..

E

Elixman Paper Core Co., Inc. .. ..
Elk Fire Brick Co. of Canada, Ltd.
English China Clays, Ltd. .. ..
Engineering & Machine Works of Canada, Ltd. 18

F

Ferguson, H. S. 22
Ford, J. & Co. .. ..
Foundation Co., Ltd. 22

G

Galt Knife Co., Ltd. .. ..
Garden City Paper Mills, Ltd. .. .. ..
Geigy Co., Inc. 27
Goldie & McCulloch Co., Ltd. .. .. ..
Goold, Shapley & Muir Co., Ltd. .. 86
Gottesman, M. & Co 29
Graselli Chemical Co., Ltd., The ..
Graton & Knight Mfg. Co., Ltd. ..
Gutta Percha & Rubber, Ltd. 16

H

Hamblet Machine Co. 28
Hamilton, Wm. Co. of Canada, Ltd. 89
Hamilton Gear & Machine Co. 72
Hans Renold of Canada, Ltd. .. .. ..
Hardy, George F. 22
Harland Engineering Co. of Canada, Limited .. ..
Hay Knife Co., Ltd., Peter 72
Hendrick Mfg. Co. .. ..
Hercules Powder Co. .. ..
Holliday, L. B. & Co., Ltd. .. .. ..
Huestis, A. M. .. ..
Hydraulic Machinery Co., Ltd. .. 4

I

Industrial Engineering Co., Ltd. .. 74
International Business Machines Co., Limited. 23
International Pulp Stone Co., The 27
Interlake Tissue Mills Co., Ltd. ..

J

Jenkins Bros., Ltd. .. ..
Jenssen Co., G. D. 23
Johnson Wire Works, Ltd., The .. 30
Jones & Glassco, Regd. .. ..

K

Kalbfleisch Corporation, The .. ..
Kander Paper Stock Co., Ltd., The 24
Kenwood Mills, Ltd. 13
Kimball, Herbert S. 23
Kingsbury Machine Works .. ..
Klipstein, A. & Co., Ltd. .. ..

L

Lacey, James D. & Co. 28
Lagerloef Trading Co. 69
Langston, Samuel M. Co. 27
Laurentide Co., Ltd. 84
Lawrence Machine Co. .. ..
Link-Belt Limited .. ..
Lombard & Co. Inc. 27

M

Management Engineering & Development Co., The 23
Mead, Patton & Co., Ltd. .. ..
McArthur, Irwin, Ltd. 20
McAvity, T. & Co., Ltd. .. ..
McKinnon Steel Co., Ltd. 22
Mills Works & Machinery, Ltd. .. 80
Miramichi Quarry Co., Ltd., The .. 21
Montabone, J. A. F. .. ..
Montreal Locomotive Works, Ltd. 19
Morrison, J. L. Co., The 78

N

National Paper Stock Co., The 24
Niagara Wire Weaving Co., Ltd. The .. 74
Northern Crane Works, Ltd. 87
Northern Electric Co., Ltd. .. ..
Northern Foundry & Machine Co. .. 12
Norwood Engineering Co. of Canada, Limited 26

O

Oliver Continuous Filter Co. 6
Ontario Wind Engine & Pump Co. Limited .. ..

P

Pacific Coast Pipe Co., Ltd. 71
Peacock Brothers, Ltd. 21
Penmans Limited 20
Port Arthur Shipbuilding Co., Ltd. 29
Porritts & Spencer Co., Ltd. 74
Price Bros. & Co., Ltd. .. ..
Price & Pierce, Ltd. 82
Provincial Paper Mills, Ltd. 76
Pusey & Jones Co., The .. ..
Pulp & Paper Mill Accessories, Ltd. 85
Pulp & Paper Trading Co. 25

Q

Quarries, C. & M. Co. 72

R

Reed, Geo. W. & Co., Ltd. .. ..
Relph, Darwen & Pearce 86
Rolland Paper Co., Ltd. .. ..
Ross Engineering of Canada Ltd. .. 27
Russell Brothers 26

S

Sadler & Haworth 2
Sewall, Jas. W. 22
Sherbrooke Machinery Co. 8-9
Smallwood Stone Co., The 24
Smallwood Low Stone Co., The .. 27
Smith Howard Paper Mills, Ltd. .. 78
Spanish River Pulp & Paper Mills, Limited 86
Steel Trough & Machine Co., Ltd. . 72
Sterling Electrical Co. 23
Stebbins Engineering & Mfg. Co. 23
St. Maurice Paper Co., Ltd. 71
Sturtevant Co., of Canada, Ltd. 87
Swenson Evaporator Co. 72

T

Tallman, Brass & Metal, Ltd. .. ..
Taylor, J. A. 80
Taylor, H. S., Ltd. 23
Texas Gulf Sulphur Co. 32
Ticonderoga Machine Works .. ..
Tippett & Co., Ltd. 30
Tyler, W. S. & Co., The 27
Trimbey Machine Works 19

U

Underfeed Stoker Co. of Can., Ltd.
Union Screen Plate Co. of Canada, Limited 87
Union Sulphur Co., The 30
United Wire Works, Ltd. 30

V

Vera Chemical Co. of Canada, Ltd. 72
Voorhees Rubber Mfg. Co. of Canada, Limited 71

W

Wallace, John H. W. & Co., Ltd. .. 22
Wardlaw, T. D. & Son 27
Walmsley, Charles & Co. Ltd. 14-15
Warren, Kenneth L. 22
Warwick Woollen Mills, Ltd. 28
Watford Engineering Works, Ltd. .
Waterous Engine Works 90
Wayagamack Pulp and Paper Co., Limited .. ..
Weir, G. & J. (Canada), Ltd. 21
Westbye, P. P. .. ..
White, W. H. 22
Whyte, William 23
Wilson Patterson Co. 72

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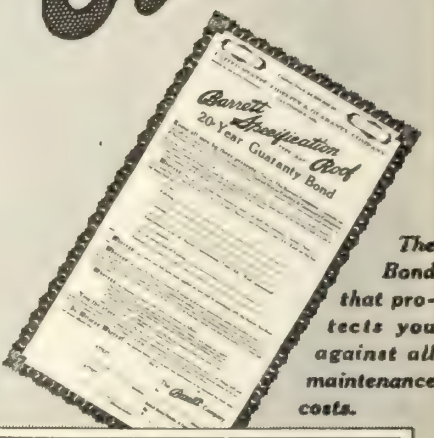
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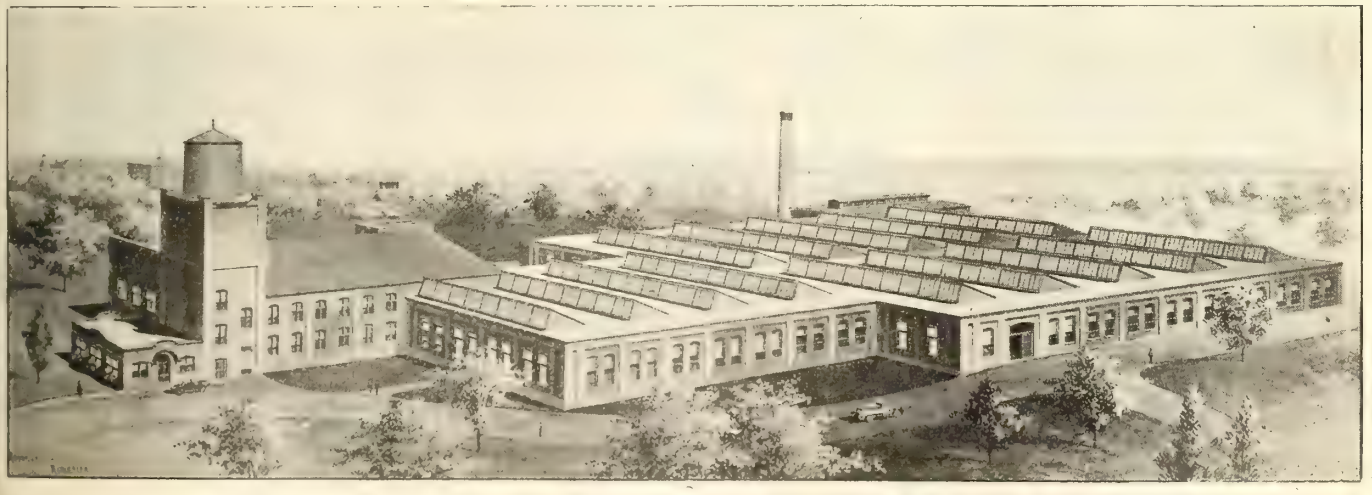
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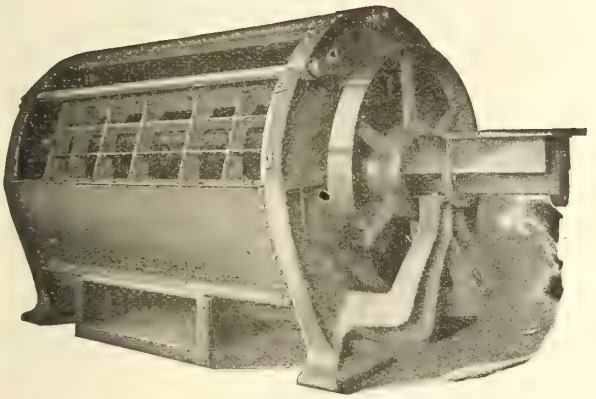
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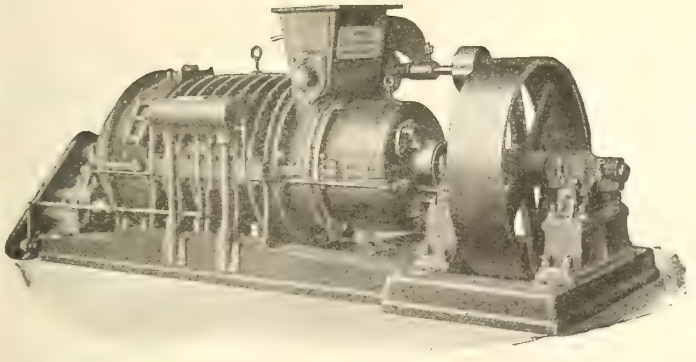


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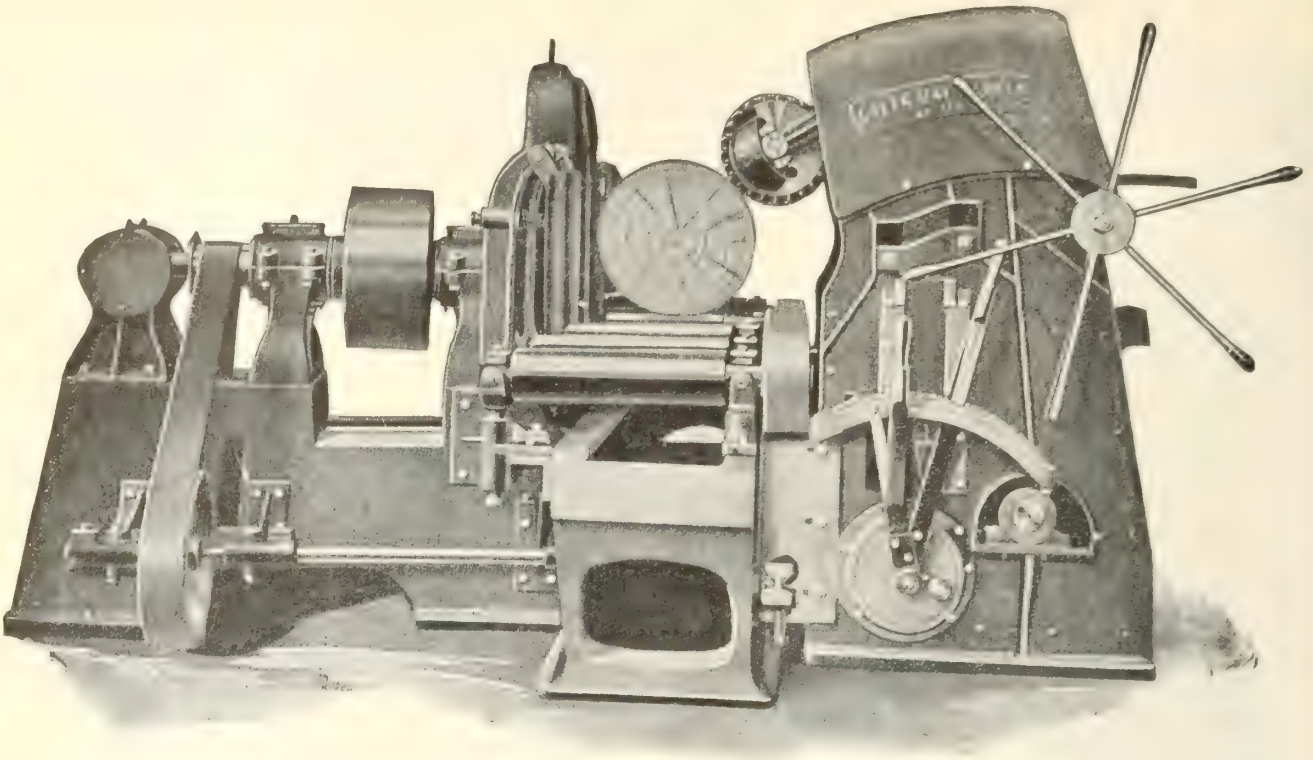


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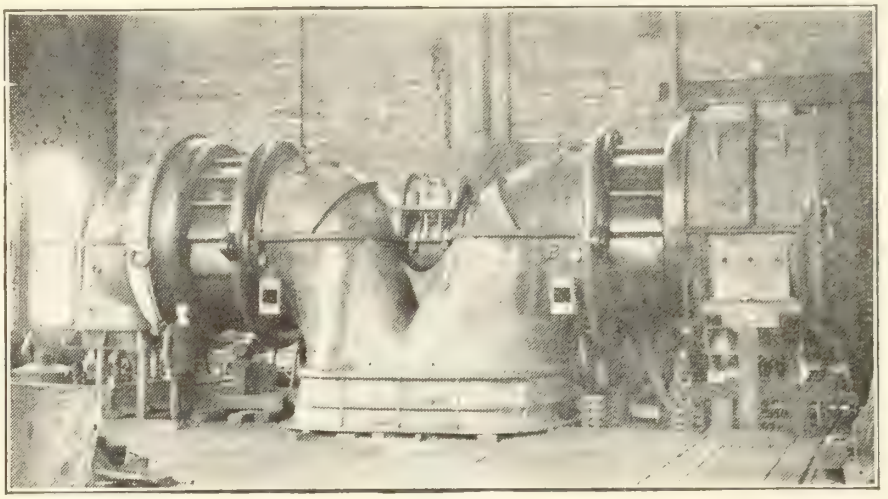
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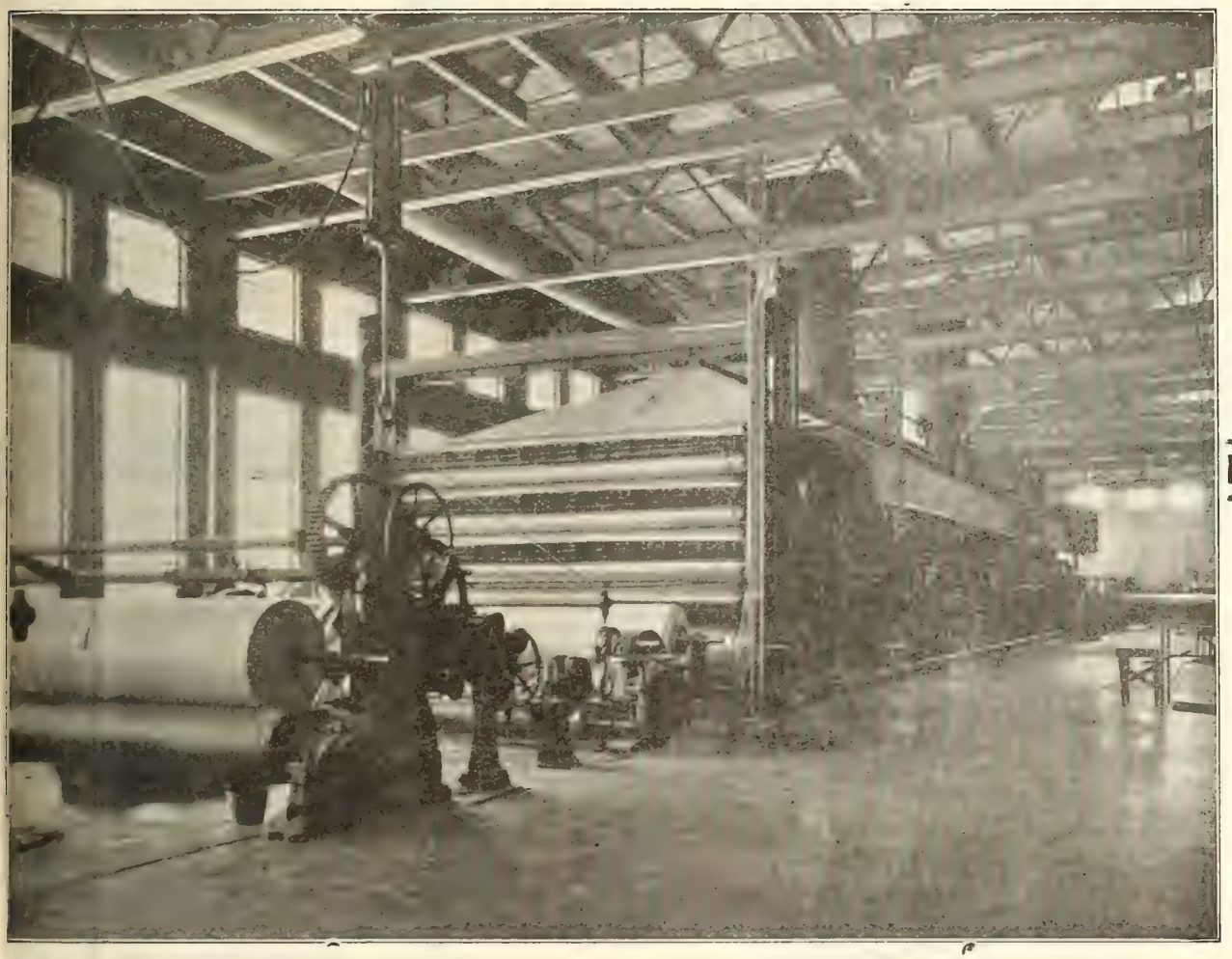
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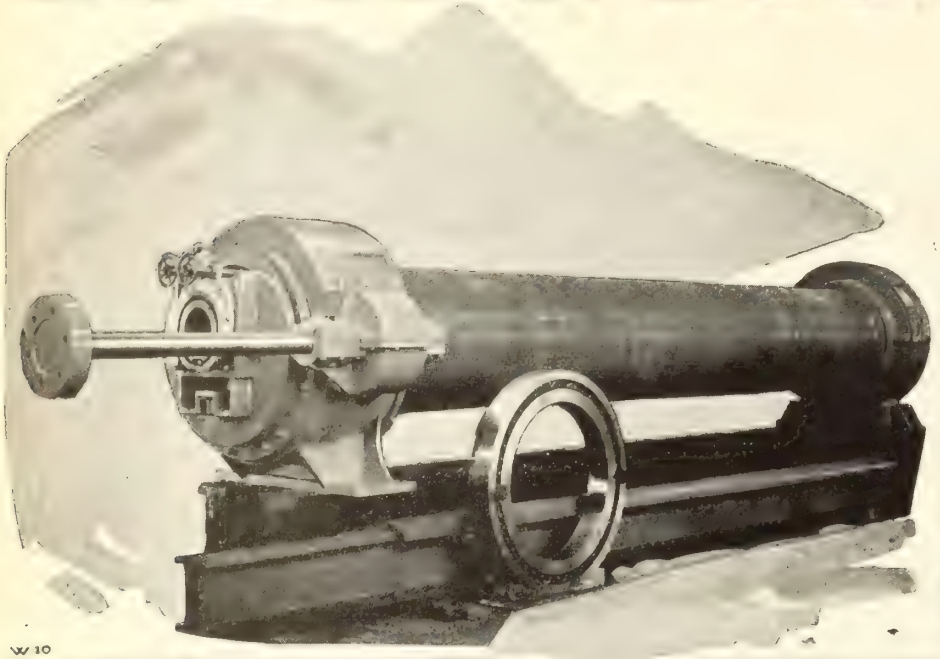
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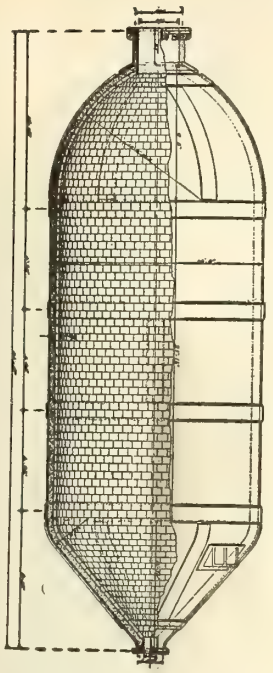
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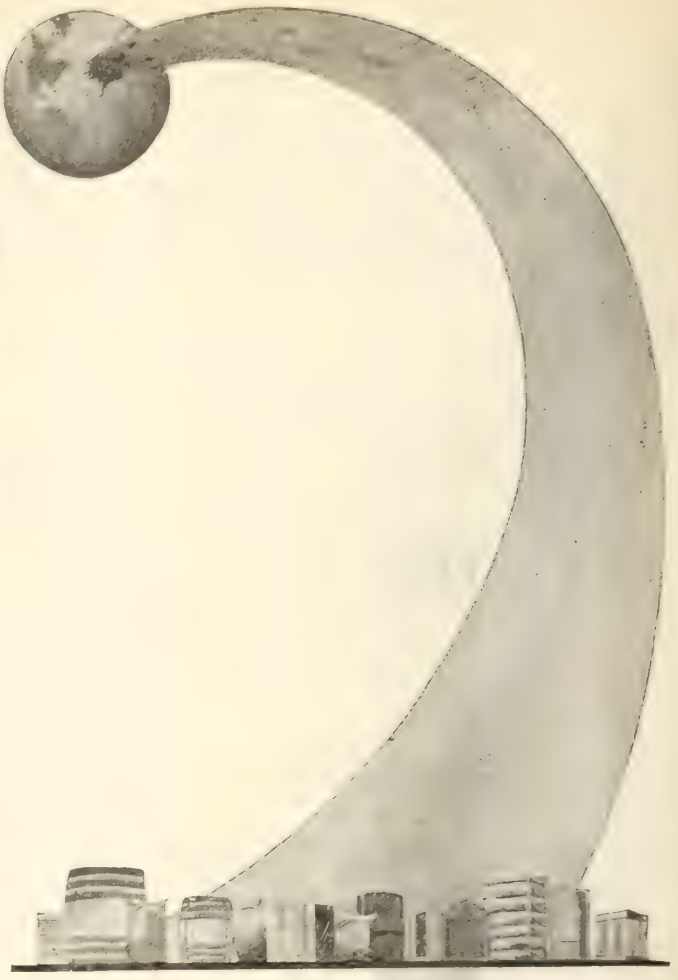
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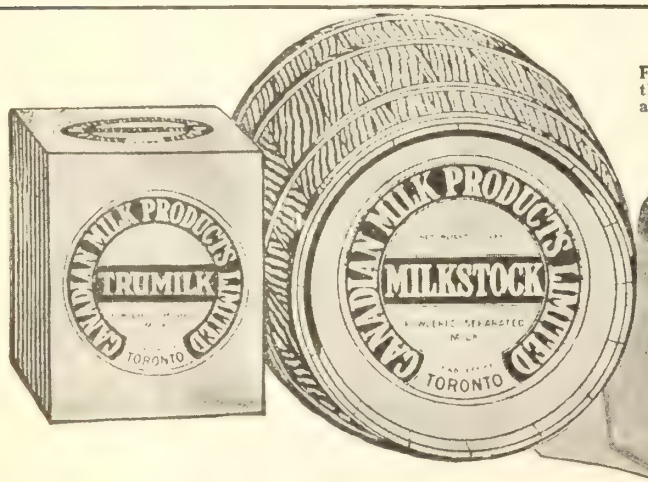
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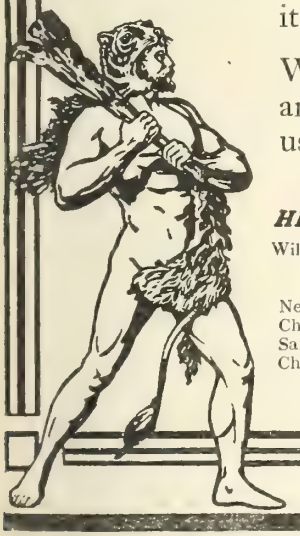
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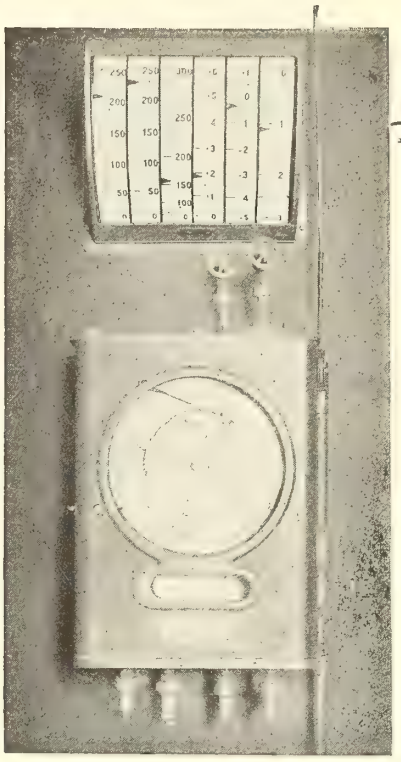
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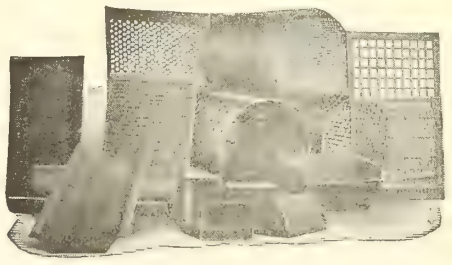
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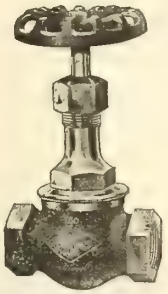


Fig. 106
JENKINS
Bronze Globe
Valve
Standard Pattern
Screwed

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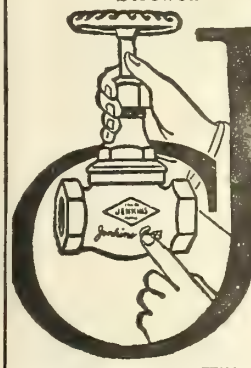
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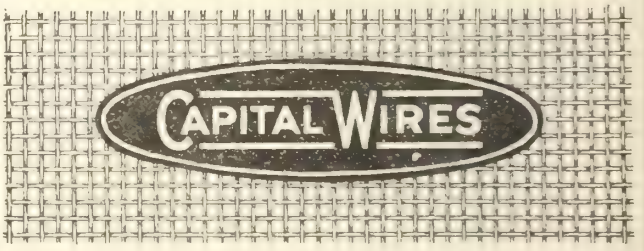
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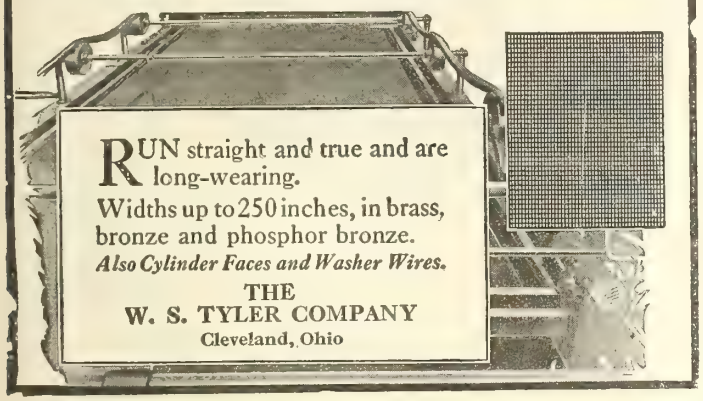
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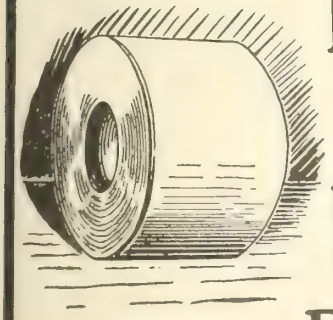
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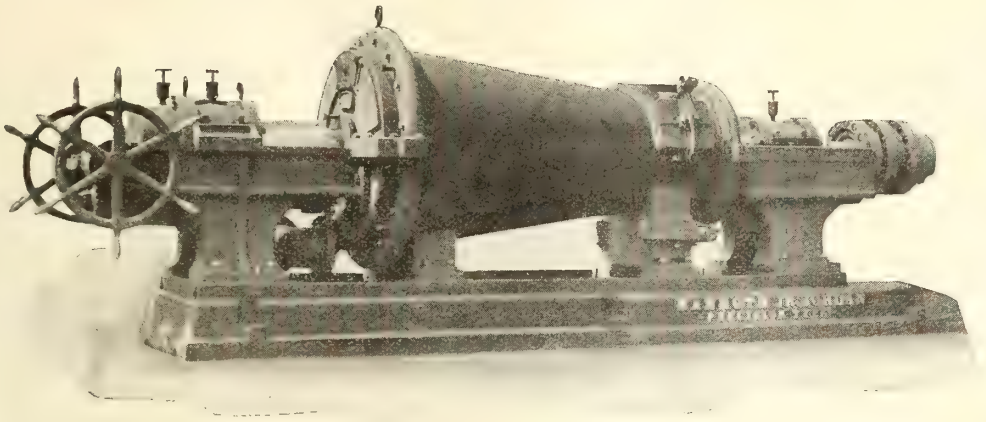
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A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XXI. GARDENVALE, QUE., August 9th, 1923 No. 31

TABLE OF CONTENTS

Editorial

Warren G. Harding 789
The export of pulpwood 789
What has he done about it? 790

Special Articles

American pulpwoods 791
Steam accumulators 795
Quebec welcomes foresters 797
Summary of sales tax 804

News of the Industry

Newfoundland paper mill debentures 796
Large timberland sale in Maine 798
Educational survey by T. A. P. P. I. 799
Chas. Walmsley & Co. (Canada) Ltd. 802
J. M. McCarthy for Cabinet 803
Brompton Co. pays dividend arrears 804
Pulp and paper news 805
Lincoln Mills delightful picnic 806
New patent regulations 806
United States notes 807

Miscellaneous Information

Canada, Empire's woodyard 798
Pulp & paper course good for foresters, too 799
Review of recent literature 800

Trade Markets

Canadian trade conditions 808
New York markets 809

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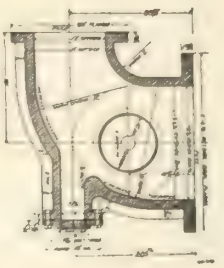
J. NEWELL STEPHENSON. M.S., Editor.

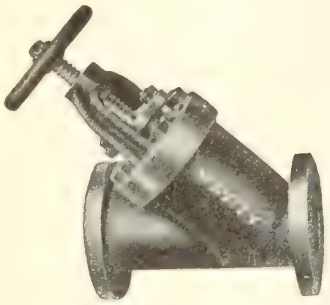
The editor cordially invites readers to submit articles of practical interest which, on publication, will be paid for.

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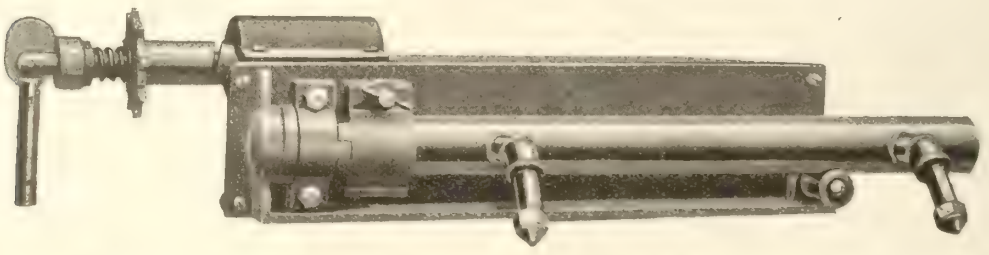
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American Pulpwoods

The Suitability of Various Species of American Woods for Pulp and Paper Production

By SIDNEY D. WELLS

(Continued from last issue)

THE CEDARS

INCENSE CEDAR — *Libocedrus decurrens.* Wt. 23 lbs. Fiber 2.0m.m.

Range — From Oregon (North Fork of Sanitam River and southward on the Western slopes of the Cascade Mountains through California (Western slopes of Sierra Nevada Mountains and coast ranges from southern border of Mendocino County to San Bernardino, San Jacinto, and Cuyamaca mountains); Western Nevada; Lower California (Mount San Pedro Martir).

Common Names — White cedar (Cal., Oreg.); Cedar (Cal., Oreg.); Incense cedar (Cal., Oreg.); Post cedar (Cal., Nev.); Juniper (Nev.); Bastard cedar (Cal., Wash.); Red cedar; California post cedar (Cal. lit.)

Sulphite Pulp
Yield 920 lbs.
Character — Difficult to bleach; Good strength; Poor color.
Possible uses — Few.

Sulphate Pulp.
Yield 950 lbs.
Character — Strong and hard fiber; Dark colored
Possible uses — As a substitute for white spruce.

PORT ORFORD CEDAR — *Chamaecyparis lawsoniana.* Wt. 26 lbs. Fiber 3.6 m.m.

Range — Coast region from southwestern Oregon (Coos Bay) to California (Klamath River), extending inland about 40 miles.

Common Names — Port orford cedar (Oreg., Cal.); Oregon cedar (Oreg., Cal.); White cedar (Oreg., Cal.); Ginger pine (Cal.); Lawson's cypress (Oreg., Cal.).

Sulphite Pulp.
Yield 1,150 lbs.
Character — Fairly easily pulped; Rather difficult to bleach; Fair strength and color.
Possible uses — Same as white spruce.

Sulphate Pulp.
Yield — 960 lbs.
Character — Difficult to pulp and bleach; Good strength; Hard and fine fiber.
Possible uses — Same as white spruce.

RED CEDAR — *Juniperus virginiana.* Wt. 27 lbs. Fiber 2.8 m.m.

Range — Nova Scotia and New Brunswick to Florida and west in Ontario (Georgian Bay) to Dakota, central Nebraska and Kansas, and Indian Territory. Actual range imperfectly known at present, the supposed Rocky Mountain and Western range being represented by a new, distinct species (J. scopularum Sarg.)

Common Names — Red cedar (N.H., Vt., Mass., R.I., N.Y., N.J., Pa., Del., Va., W.Va., N.C., S.C., Ga., Fla., Ala., Miss., La., Ky., Mo., Ill., Ind., Wis., Iowa., Ohio., Ont., Mich., Minn.); Cedar (Conn., Pa., N.J., S.C., Ky., Ill., Iowa, Ohio); Savin (Mass., R.I., N.Y., Pa., Minn.); Juniper (N.Y., Pa.); Juniper bush (Minn.); Cedre (La.).

Sulphite Pulp.
Yield — 1,300 lbs.
Character — Difficult to pulp and bleach; Very shivey and dark colored.
Possible uses — Few.

Sulphate Pulp.
Yield — 1,000 lbs.
Character — Difficult to pulp and bleach; Shivey but fairly strong and fine fibered.
Possible uses — Wrappings.

WESTERN RED CEDAR — *Thuja plicata* — Wt. 19 lbs. Fiber 3.8 m.m.

Range — From coast of southern Alaska to northern California (Mendocino County); eastward through British Columbia and northern Washington to northern Idaho (Cour d'Alene, Bitter Root, and Salmon River mountains and Montana; western slopes Rocky Mountains.

Common Names — Red cedar (Idaho, Oreg., Wash.); Canoe cedar (Oreg., Wash.); Arborvitae (Cal.); Shinglewood (Idaho); Gigantic cedar (Cal.); Cedar (Oreg.); Gigantic red cedar (Cal. lit.); Western cedar; Gigantic or Pacific red cedar (Cal. lit.); Lobb's arborvitae (in cult. Eng.); Pacific red cedar (Cal. lit.).

Sulphite Pulp.
Yield — 830 lbs.
Character — Difficult to bleach; Dark colored but fair strength.
Possible uses — Few.

Sulphate Pulp.
Yield — 830 lbs.
Character — Rather difficult to bleach; Fair strength.
Possible uses — Same as white spruce.

SOUTHERN WHITE CEDAR — *Chamaecyparis thyoides.* Wt. 20 lbs. Fiber 2.1 m.m.

Range — Coast region from southern Maine to northern Florida and westward to Mississippi (Pearl River).

Common Names — White cedar (Mass., R.I., N.Y., N.J., Pa., Del., N.C., S.C., Fla., Ala., Miss.); Swamp cedar (Del.); Post cedar (Del.); Juniper (Ala., N.C., Va.).

Sulphite Pulp.
Yield — 1,000 lbs.
Character — Fairly easy to pulp; Rather difficult to bleach; Fair strength and color.

Sulphate Pulp.
Yield — 780 lbs.
Character — Readily pulped; Difficult to bleach; Hard and fine fiber.
Possible uses — As a substitute for spruce.

BALD CYPRESS — *Taxodium distichum.* Wt. 27 lbs. Fiber 3.3. m.m.

Range — From southern Delaware (Sussex County and southward in the coast region) to Florida (Mosquito Inlet and Cape Roman); westward in the Gulf coast region to Texas (Devils River); and northward through Louisiana, Arkansas, and eastern Mississippi and Tennessee, southeastern Missouri, western and northwestern Kentucky, southern Illinois, and southwestern Indiana (Nnox county).

Common Names — Bald Cypress (Del., N.C., S.C., Ala., La., Fla., Tex., Ark., Mo., Ill., Ind.); White Cypress (N.C., S.C., Fla., Miss.); Black cypress (N.C., S.C., Ala., Tex.); Red Cypress (Ga., Miss., La., Tex.); Swamp Cypress (La.); Cypress (Del., N.C., S.C., Fla., Miss., Ky., Mo., Ill.); Deciduous Cypress (Del., Ill., Tex.); Southern Cypress (Ala.).

Sulphite Pulp.
Yield — 1,160 lbs.
Character — Difficult to cook; Very difficult to bleach; Poor strength and color.
Possible uses — Few.

Sulphate Pulp.
Yield — 1,350 lbs.
Character — Fiber long but tender.
Possible uses — As a substitute for white spruce.

REDWOOD — *Sequosia sempervirens* — Wt. 23 lbs. Fiber 5.5 m.m.

Range — From the southern borders of Oregon (on Chetco River (about six miles from mouth, and on Winchuck River), and southward in the coast region (twenty to thirty miles inland) through California (to Salmon Creek Canyon, twelve miles south of Punta Gorda, Monterey County).

Common Names — Sequoia (Cal.); Coast Redwood (Cal.); Redwood (Ca' and Am. lit.); California redwood (Eng. lit.).

Sulphite Pulp.
Yield — 1,100 lbs.
Character — Easily pulped; Difficult to bleach; Fair strength; Dark colored.
Possible uses — Low grade wrappings.

Sulphate Pulp.
Yield — 950 lbs.
Character — Long fibered but tender.
Possible uses — As a substitute for spruce.

THE- HEMLOCKS

CAROLINA HEMLOCK — *Tsuga caroliniana.* Wt. 30 lbs. Fiber—

Range — Mountains of southwestern Virginia, western North Carolina, and northern Georgia; very local.

Common Names — Hemlock (N.C., S.C.); Southern hemlock (lit.).

Sulphite Pulp.
Yield — 1,290 lbs.
Character — Fairly easily pulped; A little hard to bleach; Good strength and fair color.
Possible uses — As a substitute for white spruce.

Sulphate Pulp.
Yield — 1,260 lbs.
Character — Good strong pulp.
Possible uses — As a substitute for white spruce.

Mechanical Pulp.
Probably the same as hemlock.

HEMLOCK — *Tsuga canadensis.* Wt. 24 lbs. Fiber 3.0 m.m.

Range — Nova Scotia to Minnesota (Carleton County), Wisconsin, Michigan, and southward in the Atlantic region along the mountains to Northern Alabama (Winston county) and Georgia.

Common Names — Hemlock (Me., N.H., Vt., Mass., R.I., Conn., N.Y., N.J., Pa., Del., Va., N.C., S.C., Ky., Wis., Mich., Minn., Ohio, Ont.); Hemlock spruce (Vt., R.I., N.Y., Pa., N.J., W.Va., N.C., S.C., England, cult.); Spruce (Pa., W.Va.); Spruce pine (Pa., Del., Va., N.C., Ga.); Oh-neh-tah — "Greens on the stick" (N.Y. Indians); Canadian hemlock, (lit.); New England hemlock (lit.)

Mechanical Pulp.
Yield — 1,080 lbs.
Character — Not easily pulped; A little hard to bleach; Good strength; Fair color.
Possible uses — As a substitute for white spruce.

Sulphate Pulp.
Yield — 1,150 lbs.
Character — Good strong pulp.
Possible uses — Similar to white spruce.

Mechaical Pulp.
Yield — 2,030 lbs.
Character — Short fiber; Pinkish color.
Possible uses — As a substitute for white spruce.

WESTERN HEMLOCK — *Tsuga heterophylla.* Wt. 23 lbs. Fiber 2.7 m.m.

Range — Alaska to Idaho and Montana and southward (in the Cascade and coast ranges) to California (Marin County).

Common Names — Hemlock spruce (Cal.); Western hemlock (Cal.); Hemlock (Oreg., Idaho, Wash.); Western hemlock spruce (lit.); California hemlock spruce; Western hemlock fir (Eng.); Prince Albert's fir (Eng.); Alaska pine (Northwestern lumbermen.)

Sulphite Pulp.
Yield — 1,050 lbs.
Character — Easily pulped; Easily bleached; Good strength; Fair color.
Possible uses — Same as white spruce.

Sulphate Pulp.
Yield — 1,100 lbs.
Character — Good strong fiber.
Possible uses — Similar to white spruce.

Mechanical Pulp.
Yield 2,160 lbs.
Character — Good strength and fiber; Grayish color.
Possible uses — Similar to white spruce.

THE LARCHES

TAMARACK — *Larix laricina.* Wt. 31 lbs. Fiber 2.6 m.m.

Range — From Newfoundland and Labrador to northern Pa., northern Indiana, Illinois, central Minnesota, and northwestward to Hudson Bay (Cape Churchill, Great Bear Lake, and Mackenzie River) (in Arctic Circle.)

Common Names — Larch (Vt. Mass., R.I., Conn., N.Y., N.J., Pa., Del., Wis., Minn., Ohio, Ont.); Tamarack, (Me., N.H., V.T., Mass., R.I., N.Y., N.J., Pa., Ind., Ill., Wis., Mich., Minn., Ohio, Ont.); Hackmatack (Me., N.H., Mass., R.I., Del., Ill.,

Minn., Ont.); American Larch (Vt., Wis., nurserymen); Juniper (Me., N. Bruns. to Hudson Bay); Black larch (Minn.); Epinette rouge (Quebec); Ka-neh-tens — "The leaves fall" (Indians, N.Y.; Red Larch (Mich.); Hacmack (lit.).

Sulphite Pulp.
Yield — 1,270 lbs.
Character — Difficult to pulp; Difficult to bleach; Good strength; Poor color.
Possible uses — Low grade wrappings.

Sulphate Pulp.
Yield — 1,400 lbs.
Character — Strong, tough pulp.
Possible uses — Similar to white spruce.

Mechanical Pulp.
Yield — 2,620 lbs.
Character — Short fibered and gray color.
Possible uses — As a substitute for white spruce.

WESTERN LARCH — *Larix occidentalis.* Wt. 28 lbs. Fiber 2.6 m.m.

Range — Southern British Columbia (south of latitude 53 degrees) and south in the Cascade Mountains to the Columbia River and to western Montana; also in Blue Mountains of Washington and Oregon.

Common Names — Tamarack (Oreg.); Hackmatack; Larch (Idaho, Wash., etc.); Red American Larch; Western Tamarack; Western larch (Eng.); Great Western Larch (Cal. lit.).

Sulphite Pulp.
Yield — 1,200 lbs.
Character — Difficult to pulp; Difficult to bleach; Poor strength and color.
Possible uses — Low grade wrappings.

Sulphate Pulp.
Yield — 1,290 lbs.
Character — Good quality of kraft fiber.
Possible uses — Same as white spruce.

Mechanical Pulp.
Yield — 2,100 lbs.
Character — Brown color, short fiber and fair strength.
Possible uses—Where a medium quality of groundwood will answer the purpose.

THE POPLARS AND WILLOWS

ASPEN — *Populus tremuloides.* Wt. 23 lbs. Fiber 1.0 m.m.

Range — Southern Labrador to Hudson Bay (southern shores) and northwestward to the Mackenzie River (near mouth and Alaska (Yukon River); southward to Pa. (mountains), northeastern Missouri, southern Nebraska, and throughout the western mountains to northern New Mexico and Arizona and central California; Lower California (San Pedro Martir Mountains) and Mexico (mountains to Chiuahua).

Common Names — Aspen (N.H., Mass., R.I., Conn., N.Y., N.J., Pa., Del., Ill., Ind., Wis., Mich., Minn., N.Dak., Nebr., Ohio, Ont., Oreg., Utah, Idaho, Nev., Mont., Colo., Cal.) Quaking Asp (N.Y., Pa., Del. Cal., N.Mex., Idaho, Colo., Ariz., Ill., Iowa, Minn., Mont., Nebr., Utah, Oreg., Nev.); Mountain Asp. (Mont.); American Aspen (Vt.); Aspen Leaf (Pa.); White Poplar (Mass.); Trembling Poplar (Minn., Col.); American Poplar (Minn., Colo.); Poplar (Vt., N.Y., Ill., Ind., Minn., Mont.); Popple (Wis., Iowa, Mont.); Tremble (Quebec); Trembling Aspen (Iowa); Aspen Poplar (Cal., Mont.).

Sulphite Pulp.
Yield — 1,030 lbs.
Character — Easily pulped; Easily bleached; Very weak; Excellent color.
Possible uses — Used with longer fibered stock for better grade of papers.

Soda Pulp.
Yield — 1,080 lbs.
Character — Easily bleached; Soft and short fibered.
Possible uses — When bleached and mixed with longer fibered bleached stock is well adapted for book, envelope, and high grade printings.

Mechanical Pulp.
Yield — 2,170 lbs.
Character — Poor strength; Short fibered; Good color but may have black specks present.
Possible uses — As a filler when used with longer fibered stocks.

BALM OF GILEAD — *Populus balsamifera.* Wt. 26 lbs. Fiber 1.0 m.m.

Range — Coast of Alaska and valley of Mackenzie River (latitude 60°) to Hudson Bay and Newfoundland; southward to northern New England and New York (Taughannock Falls, Cayuga Lake), central Michigan, and Minnesota, Dakota (Black Hills), northwestern Nebraska, northern Montana, Idaho, Oregon, and Nevada.

Common Names — Balsam (N.H., N.Y., Wis., Mich., Minn., Nebr., Mont., Ohio, Ont.); Balm of Gilead (Me., N.H., Vt., Mass., R.I., Conn., N.Y., Mich., Nebr., Minn., N.Dak., Ont.); Cottonwood (Idaho); Poplar (Wis., Minn.); Balsam Poplar (N.H., Vt., Nebr., Minn.); Tacamahac (Minn.); Baumier (Quebec); Rough-barked poplar (Hudson Bay region.)

Sulphite Pulp.
Yield — 1,300 lbs.
Character — Easily pulped; Easily bleached; Excellent color.
Possible uses — Same as aspen.

Soda Pulp.
Yield — 1,170 lbs.
Character — Easily bleached; Short fiber and soft.
Possible uses — Same as aspen.

Mechanical Pulp.
Similar to aspen.

COTTON WOOD — *Populus deltoides.* Wt. 23 lbs. Fiber 1.3 m.m.

Range — From Quebec (Lower Maurice River) and Vermont (Lake Champlain) through Western New England and New York, Pa. (west of Alleghenies), Maryland, and Atlantic States to western Florida and west to the Rocky Mountains from southern Alberta to northern New Mexico.

Common Names — Cottonwood (N.H., Vt., Mass., R.I., N.Y., N.J., W.Va., N.C., Ala., Fla., Miss., La., Tex., Cal., Ky., Mo., Ill., Wis., Kans., Nebr., Iowa, Minn., Mich., Ohio, Ont., Colo., Mont., N. Dak., S. Dak.); Big cottonwood (Miss., Neb.); Yellow cottonwood (Ark., Iowa, Neb.); Cotton-tree (N.Y.); Carolina poplar (Pa., Miss., La., N. Mex., Ind., Ohio); Necklace poplar (Texas, Colo.); Vermont poplar (Vt.); Whitewood (Iowa); Broad-leaved cottonwood (Colo.).

Sulphite Pulp.
Yield — 1,035 lbs.
Character — Easily pulped; Easily bleached; Very weak; Excellent color.
Possible uses — Same as aspen.
Soda Pulp.
Yield — 1,030 lbs.
Character — Soft and easily bleached.
Mechanical Pulp.
Yield — 2,180 lbs.
Possible uses — Same as aspen.
Character — Weak, short fibered, good color.
Possible uses — As a filler when used with longer fibered stocks.

LARGE TOOTH ASPEN — *Populus grandidentata.* Wt. 22 lbs. Fiber 1.1 m.m.
Range — Nova Scotia through New Brunswick, southern Quebec and Ontario to northern Minnesota; southward to Delaware (and along the Allegheny Mountains to North Carolina, central Kentucky and Tennessee), southern Indiana, and Illinois
Common Names — Large-toothed aspen (N.J., Pa., Del., S.C., Mich., Minn.); Poplar (Me., N.H., Vt., Mass., R.I., Conn., N.Y., N.J., Pa., W. Va., N.C., S.C., Ga., Ill., Ohio); Large-toothed poplar (N. C.); Large poplar (Tenn.); White poplar (Mass.); Popple (Me.); Large American aspen (Ala.).
Sulphite Pulp.
Yield — 1,000 lbs.
Character — Easily pulped and bleached; Very weak but excellent color.
Possible uses — Used with longer-fibered stock for better grade of papers.
Soda Pulp.
Yield — 1,000 lbs. opaque.
Character — Easily pulped and bleached; Soft, opaque, and short fiber.
Possible uses — Same as aspen.
Mechanical Pulp.
Same as aspen.

NORWAY POPLAR. Probably cottonwood. Pulping tests the same as for cottonwood.

YELLOW POPLAR — *Liriodendron Tulipifera.* Wt. 26 lbs. Fiber 1.8 m.m.
Range — From Rhode Island to southwestern Vermont and west to Lake Michigan (through southern Michigan as far north as Grand River); south to Florida, southern Alabama, and Mississippi, west of Mississippi River in southeastern Missouri and adjacent Arkansas.
Common Names — Tulip tree (Vt., Mass., R.I., Conn., N.Y., N.J., Del., Pa., Va., W. Va., D.C., N.C., S.C., Cal., Ark., Ky., Ohio, Ind., Ill., Ont.); Whitewood Vt., Mass., R.I., Conn., N.Y., N.J., Del., S.C., Ky., Ohio, Ill., Mich., Ont.); Yellow poplar (N.Y., N.J., Pa., Del., Va., W. Va., N. C., S.C., Ala., Ark., Ky., Ohio, Ind., Mo.); Tulip poplar (N.J., Del., Pa., S.C., Ill.); West Virginia poplar (Pa., Del., Md., W. Va.); Poplar (R.I., Del., N.C., S.C., Fla., Ohio); White poplar (Pa., Ky., Ind.); Blue poplar (Del., W. Va.); Hickory (Va., W. Va., N.C.); Popple (R. I.); Cucumber tree (N.Y.); Canoe wood (Tenn.); Old Wife's Shirt-tree (Tenn.); Ko-yen-ta-ka-ah-ta — "White-tree" (Onandaga Indian, N.Y.); Basswood (Ohio).
Sulphite Pulp.
Yield — 1,170 lbs.
Character — Easily pulped; Difficult to bleach; Poor color.
Possible uses — As a substitute for aspen.
Soda Pulp.
Yield — 1,150 lbs.
Character — Soft, opaque and easily bleached.
Possible uses — Same as aspen.
Mechanical Pulp.
Same as aspen but slightly stronger.

BASSWOOD — *Tilia americana.* Wt. 21 lbs. Fiber 1.1 m.m.
Range — New Brunswick to Virginia and (along Allegheny Mountains) to Georgia and Alabama (mountains); west (in Canada) to Lake Superior (eastern shores) and to Lake Winnipeg (southern shores) and Assiniboine River (in United States), to eastern Dakota, eastern Neb., Kansas, Oklahoma, and eastern Texas.
Common Names — Basswood (Me., N.H., Vt., R.I., Mass., Conn., N.Y., S.J., Del., Pa., W. Va., D.C., N.C., S.C., Ga., Ala., Miss., La., Ark., Ky., Iill., Ind., Iowa, Wis., Mich., Ohio, Ont., Neb., Kans., Minn., N. Dak.); American linden (Me., N.H., R.I., N.Y., Pa., Del., W.C., Miss., Ohio, Ill., Neb., N. Dak., Ont., Minn.); Linn (Pa., Va., W. Va., Ala., La., Ill., Ind., Ohio, Mo., Iowa, Kans., Nebr., Wis., S. Dak.,); Linden (Vt., R.I., Pa., W. Va., Nebr., Minn.); Limetree (R.I., N.C., S.C., Ala., Miss., La., Ill.); Whitewood (Vt., W. Va., Ark., Minn., Ont.) Beetree (Vt., W. Va., Wis.); Black limetree (Tenn.); Smooth-leaved limetree (Tenn.); White Lind (W. Va.); Wickup (Mass.); Yellow basswood (Ind.); Lein (Ind.).
Soda Pulp.
Yield — 1,020 lbs.
Character — Soft and easy bleaching.
Possible uses — Similar to aspen.
Mechanical Pulp.
The same as aspen.

BLACK WILLOW — Salix nigra. Wt. 21 lbs. Fiber 0.8 m.m.
Range — New Brunswick to southern Florida and west to eastern Dakota, Nebraska, Kansas, Oklahoma, southern Arizona, and south into Mexico. In California from the Sierra Nevada to Colusa County, and Sacramento River to Arizona).
Common Names — Black willow (N.H., Vt., R.I., N.Y., Pa., Del., S.C., Fla., Ala., Miss., La., Tex., Ariz., Cal., N. Mex., Utah, Ill., Wis., Mich., Minn., Nebr., Kans., Ohio, Ont., N. Dak.); Swamp willow (N.C., S.C.); Willow (N.Y., Pa., N.C., S.C., Miss., Tex., Cal., Ky., Mo., Nebr.).
Sulphite Pulp.
Yield — 1,100 lbs.
Character — Easily pulped; Easily bleached; Very weak; Excellent color.
Possible uses — Same as aspen.
Soda Pulp.
Yield — 950 lbs.
Character — Soft and easily bleached.
Possible uses — Similar to aspen.
Mechanical Pulp.
The same as aspen.

(To be Concluded)

STEAM ACCUMULATORS

By M. EMANAUD

(Translated from "La Technique Moderne", xv, 193-197 (April 1, 1923) and 237-241 (April 15, 1923), by A. Papineau-Couture)

(Continued from last issue.)

Bell Accumulators — We shall also mention an entirely different type of accumulator, similar to a gas meter and working under approximately constant pressure. As example we shall describe the accumulator installed at the Carl pit of the Kölner Bergwerksverein, consisting of a cylindrical bell 8 meters in diameter resting in a water-sealed cylindrical tank, and having a vertical displacement of 7 meters. The bell is guided in its course by a metal framework, and is loaded so as to maintain an interior pressure of 1.025 to 1.035 atmospheres.

The steam enters in the center of the base, and is withdrawn through a vertical pipe which opens at a point near the summit of the bell when it is in its lowest position. Live steam automatically keeps up the pressure when the bell is right down and there is not enough steam fed to the accumulator to maintain the pressure.

This type, as compared with the ones containing a large mass of water, possesses the advantage of a more constant pressure, and consequently has less effect on the running of the engines from which it draws its steam. On the other hand, for a given volume it can store up less heat than the water type of accumulators, and it has not been developed to the same extent as the latter.

Ruths Accumulator — During the last few years the Swedish engineer Ruths has directed his attention to the construction of large capacity accumulators working under high pressures. The following installations can be mentioned:

1) A 345 cubic meter accumulator installed in 1920 at the Kaukas cellulose mill, in Finland. It consists of a cylinder 17.5 meters long and 5 meters in diameter.

2) A 456 cubic meter accumulator, consisting of 2 cylinders 4 meters in diameter and 19.2 meters long, installed at the electric station at Malmoë, Sweden, and working between the pressure of 10 and 7 kilos per square centimeter. It has a thermal capacity of 36,000 kilos of steam.

3) An important installation at the Lauchhammer power station in Germany. It consists of a 700 cubic meter accumulator made up of two cylinders each 5 meters in diameter and 19.5 meters long. It has a very large capacity, but there is no reason why even much greater capacities should not be reached. It is used for facilitating the handling of the daily peak in producing electric power, and we shall refer to it again further on.

These accumulators, shown in Fig. 10, are cylindrical shells constructed of mild steel plate with hemispherical ends. They are almost completely filled with water, and are heavily lagged with a 100 mm. thickness of Kieselguhr, or its equivalent, as they are usually placed outdoors. They are mounted on supports which allow them to expand freely. The steam is distributed by means of diffusers which cause circulation and ensure uniform temperature throughout.

In the type shown in Fig. 10 steam enters at A. The set of valves S_1 being shut and the set S_2 being open, the steam goes through B and reaches the diffusers at C. When it is necessary to withdraw steam, S_2 is closed, S_1 is opened, and the steam is withdrawn from the dome of the accumulator through A. The steam is drawn off through suitable nozzles to prevent entrainment of water, which might be caused by rapid evaporation when the pressure falls rapidly. The water level is quite high, the shell being normally 90 to 95 per cent. full. In certain cases a specially designed superheater, described in "Stahl und Eisen" of June 15, 1922, can be used in conjunction with the Ruths accumulator.

The various accessories, valves, manometers, etc., are normally grouped together for convenience; while those which cannot be so arranged are electrically controlled from the same place.

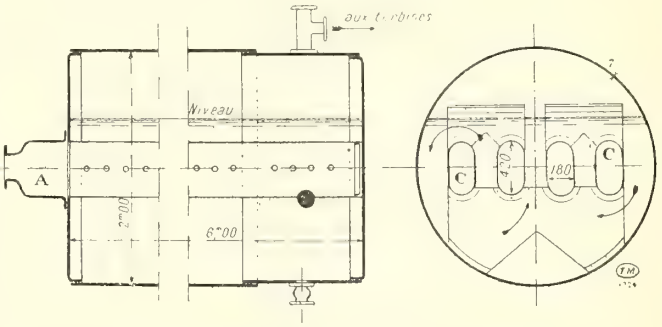


Fig. 10. — Coupe longitudinale d'un accumulateur Ruths.
Longitudinal and cross sections of a Ruths accumulator

Comparison of the Various Types

We need not give any more description of the various kinds of apparatus; the examples furnished are sufficient to show what forms they can take.

It is interesting to compare them from various standpoints: possible speed of discharge, proper operation during discharge, dryness of the steam furnished, effect on the running of the machines from which they derive their steam, radiation losses, ease of operation, attention required, their life, cost, etc.

For instance, the bell type lend themselves to more rapid changes in load because the necessity of having a uniform temperature is not so great; lack of uniformity in the temperature does not limit, or even stop completely, the storing of the steam, as would happen in a condensation accumulator. Also, we have seen that the bell type, owing to the constant pressure under which they work, have much less effect on the operation of the machines from which they derive their steam. On the other hand, they are generally bulkier than the water type, as the condensation of the steam in the latter reduces the volume occupied in the ratio of the specific volumes of steam and of water. But this advantage is not as great as might appear at first sight, for the water type of accumulator necessarily contains a considerable volume of water which is not converted into steam when the apparatus is discharged. The conclusion might even

in certain cases be reversed if we considered only the area covered by the accumulator.

The water type of accumulator is easier to insulate and requires less attention than the bell type owing to the fact that the bell is movable. An accumulator of the water type which has been properly designed to ensure uniform temperature and prevent too violent ebullition is very reliable and it can be operated at a distance.

The dryness of the steam from the accumulator depends not only on the regularity of the ebullition and the rate of evaporation, but also on the loss in pressure which it may undergo if it goes through a reducing valve.

Manners of Utilizing Accumulators

The installations which we have described above are merely particular instances of what has been done; but the scope of usefulness of the steam accumulator is much wider, and it is worth while looking into the various manners in which it can be used. And these different methods of utilization can be combined together in many ways so that there is a very great variety of possible types of installations.

We shall now consider the steam accumulator in turn as:

1) An independent water and steam storage for a single boiler;

2) A common storage for a battery of boilers;

3) An accumulator for exhaust steam;

4) An intermediate pressure regulator when steam is used in several stages;

5) A regulator between steam from various sources on the one hand, and various machines using the steam on the other;

6) An accumulator properly so-called, which allows of taking care of peak loads in power stations;

7) A thermal accumulator;

8) A steam regenerator;

9) A transformer which allows steam to be generated under conditions entirely different from those under which it is utilized (especially for production at a very high pressure);

10) A flow regulator in large condensing stations.

Case 1. — This is the simplest and the one which we considered at the beginning of this article. It is a separate water storage for large capacity boilers, which gives in the same installation the advantages of fire tube and of water tube boilers. It is separate from the boilers and is not heated directly; but this does not prevent using flue gases to protect it against radiation losses, even though the gases are not brought directly in contact with the shell of the accumulator. It is easy to construct and requires but little attention and upkeep, and its connections with the boiler are such that they can be modified by merely operating a few valves. Though variations in the water level in the boiler require watching they are of no importance in the accumulator.

It protects the boiler against sudden changes in load for a period of time proportional to its capacity, so that the boiler is called upon to face only slow variations in the steam demand and there is time to change the rate of combustion in passing from one set of conditions to another.

Steam generators for fireless locomotives fall in this class.

The accumulator can be used as a feed water heater, as we have already seen, the water being fed to the boiler by gravity if the accumulator is mounted over the boiler. The advantage of such an arrangement is readily seen.

Let Q be the weight of steam per hour generated by the boiler when operating under normal conditions. Suppose that for a certain time O_1 the steam consumption per hour is q_1, which is smaller than Q. During this time we can accumulate an amount of heat equal to

$$\theta_1 L_T (Q-q_1)$$

in which L_T is the latent heat of vaporization of water at temperature T corresponding to the working pressure. Now, let us use this heat by condensing the weight of steam $Q-q_1$ at T and heating a weight of water P from t to T°. We then have the relation

$$L_T (Q-q_1)\theta = Pc\,(T-t)$$

in which c is the average specific heat of the water between T and t. Hence

$$P = \frac{L_T}{c}(Q - q_1)\frac{\theta_1}{T - t}$$

Suppose, now, that the steam demand becomes greater than the hourly production Q. The cold water is shut off, and only the water in the accumulator, at T° is used. If the rate of combustion is not altered the same amount of heat will be absorbed by the boiler, namely (since it received water at t°) $Q((T-t)c + L_T)$, and the weight of water q_2 which can be evaporated from and at T° is such that

$$q_2 L_T = Q((T-t)c + L_T)$$

whence

and this weight of water can be evaporated until the whole weight P in the accumulator has been evaporated, i. e., for a time θ_2 such that

$$q_2\theta_2 = P.$$

Consequently, the demand q_2 can be met for a time θ_2 and the combination can be proportioned and the weight P chosen so that a variable demand can be met by means of a uniform production.

This arrangement combines the advantages of water tube boilers with those of large capacity boilers. Pressure can be got up very rapidly by cutting off the accumulator. Incidentally, dryer steam is obtained because separators are more easily used; the scaling of the heating surface is decreased; there is a smaller loss of hot water when blowing down the boiler to clean it, etc.

(To be Continued)

LARGE TIMBERLAND SALE IN MAINE

More than 20,000 acres of timberland in the town of Vanceboro, Me., were sold last month to W. D. Hutchings and H. L. Pushon of Augusta, Me., and William B. Kendall of Bowdoinham, Me. The price paid was not given out, but it is said to have been in excess of $200,000, making it the largest timberland transfer of the year in Maine. The timberland was sold by Jerome Butterfield of Kingman and John A. Weatherbee of Bangor.

Do not make a friend of a man whom you would regret to see married to your sister, if you had one.

Woodlands Section

QUEBEC WELCOMES THE FORESTRY CONFERENCE

When the Imperial Forestry Conference returned to Quebec on August 3, after a tour of New Brunswick, the Province and city of Quebec entertained the visitors with inspection of points of historic and religious interest, and a dinner at the Garrison Club. On Saturday the party proceeded to Berthierville for an inspection of the Provincial Nurseries and thence to Ottawa via Montreal. The current week is taken up with the business items and discussion of topics on the Agenda.

In the course of his address at the Garrison Club, which is reported in The Star, Montreal, Premier Taschereau said:

I bid you, and particularly our distinguished visitors from distant shores and neighboring lands, a most hearty welcome to the old City of Quebec.

We still remember, my Lord (Lord Lovat.) your stay in our midst in 1908, when you joined with us in celebrating the tercentenary of the birth of our city, and we are pleased to notice that you did not await the next similar celebration to return to us. We hope, however, that you will attend it provided you give us an occasional call in the interval.

Canada, while these fifteen years have drifted to the past, has grown wonderfully. New problems have arisen and the great war has left in its path not only sorrow in 60,000 homes, but the difficulties and obstacles that any young country, in the period of its early development, has to face and conquer.

Shall we master them? Despondency and defeat are words unknown to the Canadian dictionary. And rest assured that Quebec, with her natural resources, magnificent rivers, fertile fields, boundless forests, with her peaceful, sturdy, law abiding and progressive people, will do her full share in keeping up our fair name, progress and credit.

Co-incident with the commencement of this conference, a friend of Canada and of the province of Quebec has started in a daily paper a series of articles under the caption "A National Danger."

The writer of these articles, who is no friend of this Government, although he hails from Three Rivers — and that section of the province has been liberally treated by the Government — lays all the blame on the provincial authorities for the recent fires that have unfortunately destroyed so much of our wealth of timber.

A Few Facts

Our friend from Three Rivers brazenly states that the Government has done nothing to protect the forests that we are quiet spectators of the destruction that is going on, that within a short period all our forests will be destroyed and that our colonization policy is destructive of any progressive forest policy we might adopt.

I pray, gentlemen, do not be alarmed. I will not talk politics but I wish to lay before you a few facts, and will then leave it to you and to the public to draw conclusions. The question is too important, too national, too vital to our province, to drag it into the political arena.

You will allow me to simply make a statement of facts, that will show you how unfair it is to accuse men entrusted with the administration of this province of having failed to realize the importance of our forests and the necessity of preserving them, not only for the actual benefit of our people but for the welfare of future generations.

First, remember that our timber berths are not sold outright, but leased.

A restriction is imposed as to the diameter of the trees that may be cut, thereby insuring the preservation of trees for generation purposes.

In 1910, an Order in Council was passed prohibiting the export of pulpwood from licensed land, with the result that numerous pulp and paper industries have been established in our province.

Ever since that year, regulations and laws have been adopted which all aimed at protecting the forests, and securing the greatest possible efficiency in our Department of Lands and Forests. And I am glad to be able to compare my administration on that point with that of my able predecessor, Sir Lomer Gouin.

Only a few years ago, forests and colonization lots were managed by the same department. We separated them, feeling that the old conflict of interests between holders of timber limits and colonists would thus disappear. They have, in a large measure. During two years 25,000 lots have thus passed from the Crown Lands Department to the Colonization Department.

Our policy is to group settlers and keep them as far away as possible from the timber limits. In view of what has been going on in this province for the past fifty years, this program requires time, but will be accomplished.

Six of our best men have been sent to Europe to study forestry and its preservation. We will send some more.

Our intention is, after the inventory that is now being taken of our timber wealth is completed, to control the cut so that only the annual growth will be removed from the limit, thus making it perpetual.

Our friend from Three Rivers has also forgotten to tell the public all about our forestry school, which has given such good results. And he would not mention, naturally, the immense works we have performed to facilitate the driving of logs on our rivers.

Reason For Fires

But what about fires? Everybody knows that the three last seasons have been unusually dry with the result that many fires were started in the forests and caused great destruction.

It should be kept in mind, however, that these fires were not confined to Quebec. While approximately 500,000 acres were burnt here last year, President Harding publicly stated that over 12,000,000 acres had the same fate in the United States.

Even in France, where they have 4,000 trained forest rangers and a most efficient organization, where forests are more scattered than here and all well provided with roads and firelanes, and where the most rigid regulations prevail in respect to forests, in July and August, 1921,

owing to a persistent drought, they could not prevent a large number of most disastrous forest fires.

Let me add that such a great fire as that which destroyed our Temiscaming district last year came from Ontario. This year many fires originated in New Brunswick and Maine and crossed the border.

Our friend from Three Rivers claims that last year we paid a niggardly $3,000 to a company to help stop fires. Why is he not loyal enough to state that the Government spent $318,000 last year in fighting forest fires? This year the amount used for that purpose may run into the half million.

In spite of all the displeasure we were bound to incur from settlers and others, we took upon ourselves to close the forests to all comers when drought made the danger of fire more imminent.

Notwithstanding the repeated and vehement protests of settlers, we have adopted and maintained a regulation forbidding settlers to start a fire without first obtaining a permit from a Government officer.

Quite a few have disobeyed the law. So have all of you when driving your expensive limousines at an excessive speed. Many settlers have been fined, others sent to jail. We are told that the fine is not heavy enough. It is today $200. If a judge imposes a fine of only $25, is it the fault of the Government? Are we going to substitute ourselves for the law courts of this province?

Bear in mind, I pray, that this Province is above all agricultural. Unless colonization progresses, the Province cannot prosper. We cannot and will not sacrifice colonization to timber operations. Both should progress hand-in-hand. Limit holders and settlers are not and must not be enemies. There is room enough in Quebec for these two great assets, and our aim is to establish between them an entente cordiale that is possible and practicable. Such an entente is the interest of both.

We are trying to help our colonists. Seventy thousand posters are continually recalling to them the danger of fire. Circulars have been read from the pulpit in every parish church warning them against the setting of fires. Illustrated lectures have been delivered. Fifty thousand calendars and 400,000 postcards have been circulated with this one end in view: prevention of forest fires.

To the Canadian Forestry Association we give an annual grant of $1,000 to help it to carry out, by means of its forestry magazine, an educational campaign in behalf of forest conservation. In the province of Quebec, a French publication called "La Vie Forestière et Rurale" is being circulated to show our population the importance and necessity of preserving and wisely exploiting our forest resources.

The limit holders have formed among themselves protective associations: 85 per cent of them have joined. Their object is to fight fires. We pay a dollar for every dollar they spend. We made this agreement with them who are most interested in protecting their limits, and they should have cause to be satisfied.

In 1920, we established in the Lake St. John district, at Roberval, a hydroplane station in connection, not only with forest inventory work, but also with the detection of forest fires. For the maintenance of this station we pay annually $10,000.

In 1920, the personnel of the forestry service was 734. It is today 1,500. Some days ago, when fires were raging, 5,000 men were in the bush fighting the flames, and we passed legislation enabling us to compel every man to become a fire-fighter.

If the timber wealth of the Province was being destroyed as stated, with annihilation in sight, do you believe that British and American capital would pour in this Province, to join Canadian capital and erect these great pulp and paper mills which would never be built if they had not a forest reserve for at least fifty years to come?

The men behind these immense and costly undertakings are not children. They are familiar with the conditions and possibilities of our province and would not invest millions and millions of dollars, if the future was as black as it has been painted.

They have confidence in our province, and they may rest assured, together with all our limit-holders, that this Government will co-operate with them to the fullest extent in order to protect our great national asset, the forests.

We are open to all suggestions and ready to receive the advice of men of good will, of experience, and imbued with a true Canadian spirit, who place these vital questions above the petty overflows of the petty imaginations of petty politicians.

CANADA, EMPIRE'S WOODYARD

By ROBSON BLACK, Manager

The Canadian Forestry Association

Of the total area of forests in the British Empire, Canada holds over 50 per cent. India has 14 per cent., and Australia and New Zealand about 8 per cent.

Seventy-five per cent of the forest area of the Empire belongs to the people and only 25 per cent. to corporate bodies and private individuals. In Canada alone more than 85 per cent. of the forest area is public owned.

The Canadian people gain from their forest possessions the enormous revenue of $500,000,000 a year, representing the production of all branches of our forest industries.

More than 100,000 men are engaged in Canada converting forest products into wealth in some form or other. Nearly 400,000 other people depend on this forest army for their food and shelter.

In the pulp and paper mills are 33,000 men, drawing $40,000,000 a year in wages. The lumber industry pays 55,000 men $60,000,000 wages annually. These are but two industries out of a score that are directly dependent on a forest supply.

The Canadian people cause 4,000 forest fires a year through recklessness. The burned material represents many times what is utilized by all the industries from coast to coast.

NEWFOUNDLAND PAPER DEBENTURES

A cable from London to the *Wall Street Journal* says: "Underwriting has been completed for the Newfoundland Power & Paper £2,000,000 4½% Class A mortgage debentures at 95, guaranteed by British Government, which will be followed shortly by £2,000,000 5½% Class B mortgage debentures, guaranteed by Newfoundland Government.

INSTITUTE ITEMS

EDUCATIONAL SURVEY BY T. A. P. P. I.

This survey, in a 72-page pamphlet, has been given wide distribution as a guide for the use of the text books. Now that the books are being distributed, the pamphlet is used in connection with the text books, to give the workers themselves preliminary hints as to the manner in which the books are to be used with these same workers as the pupils.

One of the early definite steps taken, was for the holding of foremen's training conferences, the first being held at a southern mill, the Champion Fibre Company's plant at Canton, N. C. The conferences for foremen were later organized in other mills, always with the co-operation of the state and federal supervisor of vocational education, and the latest to be reported was a joint conference in Portland, Oregon, for the Pacific Coast foremen.

Meanwhile, the first two text book volumes were published. They are chiefly of a preliminary character, to give basic training in mathematics, chemistry, to provide a foundation on which future technical instruction could be given. The mathematical problems, however, were based on paper and pulp mill conditions, tying the whole work into a paper and pulp mill type of special training. Even before the appearance of the third volume, the first devoted to real technical training in the industry, classes were being organized for study. A typical example was that of the Strathmore Paper Company, of Mittineague, Mass., where George E. Williamson, president of the Technical Association, is an official, and where arrangements were made to have class work given by the Massachusetts Department of University Education. Here, the company purchased the text books for all workers who wished to register for the various courses. The books were sold to the employees at cost, and the price taken from their wage envelopes in small installments. The provision was made, however, that any employee successfully completing the courses would be refunded all that he had paid for the books, and would be permitted to retain them.

In Massachusetts the State University Extension Department has arranged to give correspondence courses. These, it is announced, are confined to residents of the state. Other mills in other parts of the country soon began to organize classes for the training of their own employees.

The next step in the progress of the work was the formulation of plans for joint instruction in paper making localities of employees of different mills. Up in Wisconsin individual mills were securing state university assistance, but in the Miami Valley of Ohio the manufacturers organized to plan joint classes for all employees, and the work is still in progress toward the development of such instruction, both in Ohio and other states.

In New York, with the largest number of mills of any state, a surprising difficulty was found. The state college of forestry at Syracuse, with paper making courses in its curriculum, and a highly developed extension department, found itself unable to undertake the work now successfully under way in other states, through state educational agencies. This handicap, however was not allowed to impede the progress of the industry in the greatest of the paper making states. Cornell University, though not a state institution, has been interested, together with the forestry department of the state college of Agriculture, located at Cornell, and the state and private colleges in that institution have tentatively agreed to meet the request of the paper industry to provide education for the mill workers.

Such steps as these have provided the routine methods of teaching the workers in the paper and pulp industry through organized classes. Another step, however, remained in the providing of education for the isolated workers where there were individuals interested, but not in sufficient numbers to warrant the formation of classes.

This problem has been met through the offering of correspondence courses on both sides of the Canadian boundary. In Canada, the Institute of Industrial Arts of Gardenvale, Quebec, has undertaken to handle correspondence courses for the paper mill workers, and its courses have been formally approved by the Canadian Pulp and Paper Association. In the United States, the University of Wisconsin has organized a course, with the approval of the Technical Association, a course in which the United States Forest Products Laboratory, located at Madison, the Seat of the University, will co-operate. The course of the Wisconsin Extension Department will be available to students in other states.

With this program now actually under way, teaching of pulp making, as outlined in the third of the five volumes of text books, in progress, the campaign of the paper industry to train its workers can be said to have been fairly launched. The training of 150,000 workers is a great task. The organization of the preparatory work steps to a point where actual class room instruction is now being given, has been no light duty.

The paper industry, however, can congratulate itself on the fact that its persistence has been such, its vision so broad, as to make possible the carrying on without interruption of three years of work, before any results could be apparent.

PULP & PAPER COURSE GOOD FOR FORESTERS, TOO

The Chief Forester of a large Canadian pulp and paper mill says, "I think one should take advantage of this opportunity to become acquainted with every branch of the industry in which he is engaged, regardless of the fact that it has no immediate bearing upon his present work. I believe that those connected with the woods operations will make progress in woods administration if and when they understand better the needs and the possibilities of the manufacturing end. That is the reason I undertook the course."

NO SMOKING!

Cigar and cigarette butts, hot ashes from a pipe, and lighted matches carelessly thrown away, are responsible for one-half of the fire losses in Canada.

LOOK

Before crossing the street, first to the left, then to the right. Be sure of SAFETY before stepping off the sidewalk.

Fatalities teach lessons but the victims never benefit, don't be a victim.

Technical Section

REVIEW OF RECENT LITERATURE

Cellulose and Lignin

A-1 The Question of Determining Cellulose with Phenol. L. KALB and V. SCHOELLER. **Cellulosechimie** 4, 37-40 (May 27, 1923). Phenol in the presence of small amounts of mineral acids readily dissolves the incrustations on plant fibers. The reaction is rapid at the water-bath temperature of 97° C. and the yields are constant. With the removal of lignin, a hydrolysis of certain polysaccharides in the plant material also occurs. The reaction is not suitable for determining the total carbohydrates, but under definite experimental conditions, besides removing the lignin, the hemicelluloses and pentosans can be separated. This procedure is superior to the drastic method of König. Comparative tests with spruce wood gave, in percentages of crude cellulose, 58 with the Cross and Bevan method, 48.3 with the phenol method, and 36.5 with the König method. percentages were 52.2, 46.1 and 36.2 respectively. 75% of the total pentosans in the wood are removed by the phenol method. It consists in the following: 4 of finely divided sample, after extraction, after extraction with acetone and dried at 96° C. are placed in a large test tube with 50 g. of dry, fused phenol. For wood, enough concentrated hydrochloric acid is added to give 0.1% HCl content, based on the phenol, and the tube is placed in a water-bath for 1 hr. at 97 C. The mass is then added to a large quantity of water containing sufficient sodium hydroxide to neutralize the acid and dissolve the phenolic compounds. The residue, after filtering, is washed with water, with dilute acetic acid, again with water and dried.-J.L.P.

A-3 Paper Making Tests with Various Plants from Indo-China. VIDAL and ARIBERT. **Congress Production Coloniale Marseille** 1922, 100-116. **Rice Straw.** The material, in 3 to 5 cm. lengths, was charged in a spherical rotating boiler, steamed 1 hr. at 1 to 2 atmospheres' pressure, cooked 5 hr. at 3 kg. per sq. cm. with 13% caustic soda (on bone-dry straw) as a 5° Bé liquor, washed and defibered simultaneously using a fine-meshed washing drum, and bleached with 16% of bleaching powder (as 4° Bé. liquor) giving 30% of pulp containing some unbleached raw shives. After careful beating, owing to the fineness and softness of the fibers, it was engine sized and loaded with starch, and run on the paper machine with some trouble due to sticking at the presses, giving a sheet with the following characteristics: thickness 0.1 mm., weight 88 g. per sq. m., breaking length in machine direction 2,450 m., in cross direction 1,868 m., average 2,159 m., bursting strength 0.950 kg. folding resistance very low It is especially suitable as a filler pulp like esparto **Imperata Cylindrica,** P. Beauv. **èImperata arundinacea** (Cyrill.). (See Groud, **Pulp & Paper** 20, 2022, Dec. 21, 1922; **Paper Trade J.** 75, No. 25, 57, Dec. 21, 1922. **Bamboo:** Nodes were removed and the internodes repeatedly put through a laboratory crusher until they were practically the same size as esparto, cut into 5 to 6 cm. lengths, charged into a rotary boiler, steamed for 2 hr. at 1 to 2 kg. per sq.cm., cooked 7.5 hr. at 4 to 4.5 kg. sq. cm. with 15% of caustic soda as 6° Bé. liquor, washed and defibered simultaneously, bleached with 16% of bleaching powder and 0.3% of sulphuric acid, and washed very thoroughly, giving a 40% yield. It was beaten, engine sized and slightly loaded with starch, and run on the paper machine without any trouble giving a sheet with the following characteristics: thickness 0.1 mm., weight 56 g. per sq. m., color light cream, formation slightly wild, breaking length in machine direction 3.357 m., in cross direction 1,955 m., average 2, 656 m., bursting strength 1.06 kg. It is soft and strong and would be suitable as a printing paper. The micrographic characteristics of all the pulps are described in detail.-A.P.-C.

A-3 Sugar Cane Bagasse and Rice Straw as Paper Stock. HACHIRO KUMAGAWA and KANCHIKI SHIMOMURA. **Paper** 32, No. 2, 7-10 (May 2, 1923). The sulphite method can give with bagasse a light yellow pulp which is difficult to bleach but the fibers of which are strong and have good felting qualities, giving a paper of excellent quality. By the sulphate process it is possible to prepare a highly bleached pulp in good yield from crude bagasse. The sulphite process is suitable for the digestion of rice straw, the pulp containing about the same percentage of ash as the raw fiber (about 14%). The ash content of the pulp does not interfere with its paper making qualities. Rice straw is much easier to pulp by the sulphate process than is bagasse. The pulp contains up to 12.5% of ash, for which there may be two plausible explanations: either the combination of the silicic acid and the cellulose matter of the straw is so strong that the action of the alkali is not strong enough to destroy it; or, more likely, the colloidal silicic acid dissolved in the waste liquor is so strongly absorbed by the pulp that it is not removed by ordinary washing. The ash can be reduced to 2% by treatment with dilute caustic soda. The ash acts as a good filler and is not detrimental to the quality of the paper.-A.P.C.

A-3 F-5 Process for Treating Fibrous Materials for Paper Making. C. Weygang. Eng. pat. 1920, 185. June 16, 1921. — Fibrous materials, particularly wheat and oat straw, are steeped at ordinary temperature for 12 to 24 hr. or are boiled, preferably under low pressure, for 3 to 6 hr. in a liquor prepared by adding 8 parts of an alkali salt such as sodium carbonate or sulphate, to a thin paste containing 8 parts of lime and 1 to 4 parts of a mineral or other crude oil. Afterwards the treated material is rinsed with water and converted into paper pulp by the usual method.-A.P.-C.

A-3 K-4 Manufacture of Cotton Substitutes. B. POSSANER VON EHRENTHAL. Eng. pat. 156,710, Jan. 7, 1921. — Cottons suitable for the manufacture of paper are obtained from various plants and waste such as linseed, straw, jute, reeds, nettles, potato haulm, willow bark, etc. The fibrous material is steeped for

3 to 6 days in water at 30 to 50° C. and allowed to ferment until incrusting substances are partially decomposed. It is then thoroughly washed in water, hydrolyzed by treatment for several hours with dilute solutions containing free mineral acid or organic acids, or their acid salts, at temperatures not exceeding 40° C., washed free from acid, and afterwards treated with dilute solutions of alkalis at temperatures not exceeding 50° C. for one or several days, whereby the fibrous material is "opened up" into flexible fibers which are then thoroughly washed and dried at low temperature.-A.P.-C.

A-3 Pulp from Sedges, Grasses and Cat-Tails. JOHANN J. GAHLER. Ger. pat. 370, 347. **Papierfabr.** 21, 185-186 (Apr. 1, 1923). The plant materials are given a preliminary steaming and then subjected to a mechanical disintegration to separate the pith. Subsequently the raw fibers are ground in water to free the elementary fibers.-J.L.P.

A-3 Manufacture of Paper. VERWERTUNG INLANDISCHER PRODUKTE. Ger. pat. 370,421 **Papierfabr.** 21, 186 (Apr. 1, 1923). The root fibers of aquatic reeds and cat-tails are used for the manufacture of paper. The starch in the root fibers is used for sizing. -J.L.P.

A-3 Production of Pulp for the Manufacture of Paper. HEINRICH EGGERS and ADOLF BURLIN. Ger. pat. 375,034. **Papierfabr.** 21, 263-264 (May 13, 1923). Comminuted stalks and leaves of lupines, as well as pods and shells of vegetables, are cooked under 2 to 3 atmospheres pressure with 2% sodium hydroxide solution and afterwards treated with 4 to 6% chloride of lime solution and a sodium carbonate solution.-J.L.P.

A-3 K-4 Paper and Cardboard from Peat. A. LAMBRETTE. **Papeterie** 44, 781-786 (Sept. 10, 1922); 921-925 (Oct. 25, 1922); 962-969 (Nov. 10, 1922); 1073 (Dec. 10, 1922); 1109-1113 (Dec. 25, 1922); 45, 19-22 (Jan. 10, 1923); 158-165 (Feb. 25, 1923); 314-318 (Apr. 10, 1923). A discussion of the economic possibilities of using various grades of peat for the manufacture of pulp and paper, with a description of a large number of experiments on a semi-commercial scale carried out with alkaline, acid and mixed processes of treatment, and a description of the products obtained.-A.P.-C.

A-15 The Reducing Power of Cellulose of Various Origins. M. N. KOMAROFF. **Bumazhnaia Promyshlenost** (Russia), I, Nos. 2-3, 228-236 (Sept.-Dec. 1922) A review of the present knowledge relating to cellulose, the hemicelluloses and the compound celluloses. Muller's titrometric method used for the determination of the reducing power of sugar has been tried and found satisfactory for use on cellulose. This method gives at once the "corrected copper value" of cellulose. The following data were collected from various authorities: purified cotton, corrected copper value in per cent (A) -0.2 to 1.8, hydrolysis number in percent (B) - 2.7 to 3.3, unbleached sulphite, A-0.5 to 2.0; B - 3.5 to 6.0 bleached sulphite, A - 1.5 to 3.96, B - 5.6 to 8.0; mercerized cotton, A - 1.9, parchment from cotton, A - 1.9; to 7.1 B - 17.6; Guignet cellulose A 10.76; B - 7.26; Flechsig's amyloid, A - 18.36, B - 26.67; hydrocellulose, cotton and wood, A - 3.6 to 8.8, B - 6.6; oxycellulose, cotton and wood, A - 5.8 to 33.2; cotton dextrose, A - 160.2. The following were obtained by the author at the Government Paper Testing Station of Moscow: Purified cotton, copper value (A) - 0.51%; unbleached sulphite, imported, A - 2.30; bleached sulphite, imported, A - 2.75; unbleached soda, A - 2.04; semi-bleached sulphite, domestic, A - 2.56; mercerized sulphite, A - 2.38; purified cotton, English, A - 1.44; same mercerized, A - 1.05; sulphite, cooked with selenium, cook No. 1, A - 3.28; cook No. 2, A - 2.94; cook No. 3, A - 3.55.-M.L.C.

A-15 Hydrocellulose II. Decomposition of Cellulose by Oxalic Acid. EMIL HEUSER and FRITZ EISENRING. **Cellulosechemie** 4, 13-21 (Apr. 8, 1923); 4, 25-31 (Apr. 23, 1923). The yields of hydrocellulose, prepared by the action of hydrochloric acid according to Knoevenagel and Busch, decrease with the time although the solubility in sodium hydroxide is the same in all cases. The yield and reaction velocity are greatly influenced by the amount of water present: increase of moisture diminishes the yield of hydrocellulose and brings about a progressive decomposition. Hydrocellulose, when subjected to a secondary hydrolysis (with dilute sulphuric acid), becomes much more reactive and is easily converted to glucose. The decomposition products of the primary hydrolysis (with hydrochloric acid) are only dextrines. Highly concentrated with hydrochloric acid changes hydrocellulose quantitatively to glucose. Upon treating with sodium hydroxide, hydrocellulose goes into solution as an alkali compound having the composition $C_{12}H_{20}O_{10}$. 2NaOH. Under definite conditions a hydrocellulose can be be prepared from viscose by oxalic acid which is identical with the one prepared by hydrochloric acid; under other conditions yields up to 65% of glucose are obtained. The yield in glucose is limited owing to the formation of an isomeric oxymethyl-furfurol. Oxalic acid reacts with hydro-cellulose to give larger quantities of these two substances, while with cellulose the yields are smaller. Oxalic acid will, however, progressively decompose cellulose similar to mineral acids. J.L.P.

A-15 Calculation of True Lignin Values. ASTRID CLEVE V. EULER. **Cellulosechemie** 4, 21-22 (Apr. 8, 1923). Corrections are given for the previously published method of the author for calculating true lignin values from empirical figures as obtained by the 72% sulphuric acid method. The empirical value, based on the wood previously extracted with benzol and alcohol, is decreased by 3.7 units to compensate for loss of acetyl groups and sulphur absorbed. The resulting figure is calculated to fat—, ash—, and protein-free wood dried at 102° C. but containing the alcohol-soluble lignin. To this is added the per cent of alcohol-soluble lignin, which has been corrected to the same basis as the value in the preceding sentence. The average true lignin value of nine tests is given as 28.2%.-J.L.P.

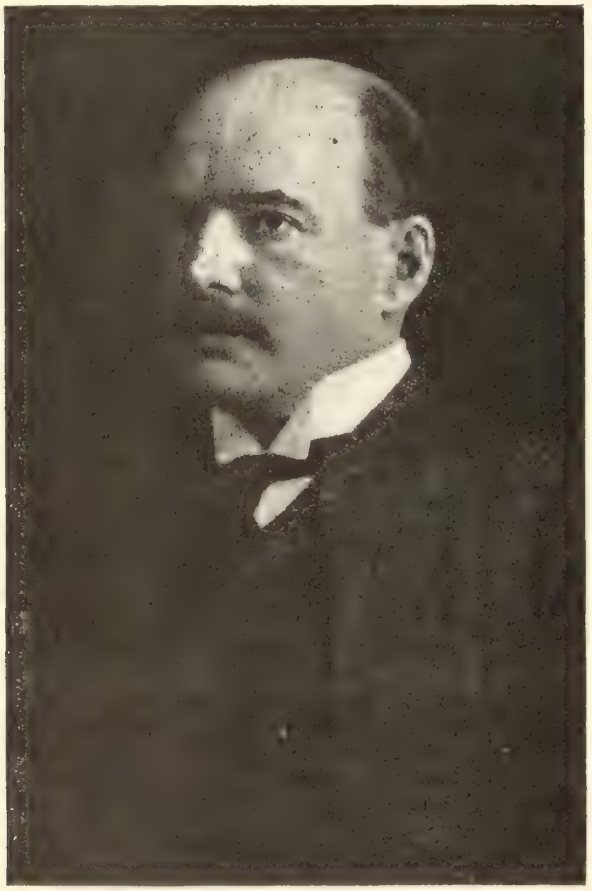
A-15 Some Derivatives of Straw Lignin. F. PASCHKE. **Cellulosechemie** 4, 31-32 (Apr. 22, 1923). Straw lignin boiled with aniline in the presence of oxalic acid gave a condensation product of the approximate formula $C_{58}H_{60}N_3O_{10}$. Lignin treated with sulphur and sodium sulphide gave a sulphur dyestuff of the formula $C_{36}H_{40}S_6O_{21}$. These reactions indicate that straw lignin has four methoxyl groups and probably four hydroyl groups. Tanning experiments proved the aldehydic character of the lignin; spent liquor from a soda cook converted a hide into soft, brown leather; waste sulphate liquor, made alkaline by addition of soda, caused the hide to become very brittle.-J.L.P.

(Continued on page 803.)

CHAS. WALMSLEY & CO. (CANADA) LIMITED

One of the latest examples of the establishment of Canadian branch works of English manufacturing houses is Charles Walmsley & Co. (Canada) Limited who have recently taken over the plant at Longueuil on the South side of the St. Lawrence River, immediately opposite the city of Montreal, which was formerly operated by Armstrong Whitworth of Canada Limited, a branch of the world renowned engineering firm of Sir W. G. Armstrong Whitworth & Co. Limited.

The activities of the Armstrong Whitworth Company of England, before and during the war were, to very large extent, connected with armaments and the equipment generally of Naval and Military forces. With the termination of the war and the universal demand for the reduction of armaments this Company found it necessary to embark on other enterprises in order to find employment for their very large capital and extensive works.



Sir WILLIAM PRICE

One of the new industries in which they decided to engage was Hydro Electric and Civil Engineering and, realizing how intimately this work is connected with the Pulp and Paper industry, arrangements were made to absorb Charles Walmsley & Co. Limited of Bury, England, the well known manufacturers of paper making machinery. This was followed by the conversion of the Armstrong Whitworth works in Canada from the manufacture of steel to the construction of paper and pulp machinery under the name of Charles Walmsley & Co. (Canada) Ltd., and the sending to this Country of a large and well qualified engineering staff from the Walmsley Works in England.

The greater part of the common stock of the Canadian business is held by Sir. W. G. Armstrong Whitworth & Co. Ltd. while an additional $1,000,000,00 has been provided by a public issue of bonds, in this country, which are supported by the unconditional guarantee of Sir W. G. Armstrong Whitworth & Co. Limited.

The Company is determined not to repeat the mistake which has sometimes been made of attempting to control the business entirely from England and has therefore placed the control in the hands of a Board of Directors consisting of prominent Canadian business men assisted by three Directors in London representing the English Parent Companies.

The General Manager of the Company is Mr. Harry Kay who for many years has been associated with the Walmsley Company in England in addition to having a large experience of Canadian methods gained during several years connection with Messrs Price Brothers & Co. Limited of Quebec.



Mr. HARRY KAY

Mr.. John Wolstenholme, the Managing Director of Charles Walmsley & Co. Ltd., of Bury, England, and also Director of the Canadian Company, will visit the Canadian Branch at frequent intervals, thereby assuring uniformity of product and the closest cooperation between the two businesses.

The reconstruction of the works is proceeding rapidly and it is anticipated that operations will be in full swing in about two months. The Company will then be producing complete paper and board machines of the famous Walmsley design, the new Magazine Grinder invented by J. J. Warren of Brownville, N. Y. the Watford Engineering Company's Tremor Screen and Gwynne's Centrifugal Pumps. The Company will also act as selling agents for all the products of Sir W. Armstrong Whitworth & Co. Ltd.

The new Company will therefore be in a position to supply the complete equipment of a pulp and paper mill including the hydro electric power plant, the



Mr. JOHN WOLSTENHOLME

structural steel work for buildings, the electrical apparatus, roll grinders and general machine shop equipment all of which are manufactured by the Parent Company or its subsidiary undertakings.

The Directors and Officers of the Company are as follows:—

President, Sir William Price. President of Price Brothers & Co. Limited.

Vice-President and General Manager. Mr. Harry Kay, formerly of Charles Walmsley & Co. Ltd., Bury, England.

Other Directors.

Mr. F. H. Anson, Vice-President of the Abitibi Paper Co.

Hon G. G. Foster, of Foster, Mann, Place, McKinnon, Hackett & Mulvina.

Mr. H. B. Walker, Montreal Manager of the Canadian Bank of Commerce.

Mr. H. Harrison, Financial Secretary of Sir W. G. Armstrong Whitworth & Co. Limited.

Mr. D. Spencer, Manager of the Hydro Electric Department of Sir W. G. Armstrong Whitworth & Co. Limited.

Mr. J. Wolstenholme, Managing Director of Charles Walmsley & Co. Ltd, of Bury, England.

Secretary-Treasurer. Capt. Daniel H. Haigh A.C.A. formerly assistant to the Financial Secretary of Sir W. G. Armstrong Whitworth & Company Limited.

Assistant Works Manager. Mr. J. Scholes, formerly of Charles Walmsley & Co. Ltd. Bury.

J. M. McCARTHY FOR CABINET

Quebec — In semi-official circles, Mr. J. M. McCarthy, vice-president of Price Brothers, and director of several public utility companies, is mentioned as Irish representative in the Taschereau Cabinet. His appointment will be made some time before the session, according to the information.

Special Pulping Processes

K-4 R-12 Cost of De-inked Newspaper Paper Trade J. 76, No. 21, 58 (May 24, 1923). Figures obtained in a mill de-inking 40 tons of newspaper stock a day showed a cost of $32. for producing one ton of de-inked newspaper pulp.-A.P.-C.

K-4 Paper Pulp from Flax Tow. R. E. RINDFUSZ and V. VOORHEES. U. S. pat. 1,430,115, Sept. 26, 1922. A high grade paper pulp is prepared by cooking tow under pressure with the lime solution to soften the shive material, removing the alkaline solution and treating the material with nitric, hydrochloric or sulphuric acid and completing the removal of the ligneous shive material by another alkaline treatment. -A.P.-C.

K-4 De-inking Waste Paper. T. JESPERSEN assignor to Lincoln Trust Company. U.S. pat. 1,424,411, Aug. 1,1922. Printer's ink containing a mineral oil vehicle is removed from paper by the action of a sodium silicate solution with or without the addition of slaked lime.-A.P.-C.

K-4 Material for Paper Manufacture. S. KAWAMURA. Jpn. pat. 38,450, Apr. 15, 1921. Cortex of the Mulberry tree and other trees are decomposed with reducing bacteria having the power of decomposing pectin, such as **B. pectinoborus,** etc.-A.P.-C.

K-4 Pulp from the Mulberry Tree. J. TAKAMURA and H. MICHIOKA. Jpn. pat. 38,491, Apr. 23, 1921. Branches and twigs of the mulberry tree are crushed mechanically, immersed in a mixture of wash water from rice and sodium carbonate solution, treated with vinegar or dilute acetic acid in a closed vessel, steamed, and boiled with caustic soda solution. A good pulp in 62% to 65% yield is produced.-A.P.-C.

K-4 Pulp from Pinetree Leaves. T. TABE and Y. TABE. Jpn pat. 38,602, May 9, 1921. Leaves of pine tree are immersed in a 0.2% to 0.5% slaked lime solution, boiled, beaten and boiled in a closed vessel, a mixture of 0.07% to 0.1% sulphur dioxide, air and carbon dioxide is introduced under a pressure of 30 to 40 lb., the pulp is beaten and bleached.-A.P.-C.

K-4 Apparatus for Disintegrating and De-inking Waste Paper. M. C. J. BILLINGHAM. U.S. pat. 1,420,-362, June 20, 1922. The printed stock is injected upwardly through a vertical nozzle against a perforated baffle which effects disintegration.-A.P.-C.

K-4 Paper from Cedar Bark. R. KAJIMURA. Jpn. pat. 37, 641, Dec. 11, 1920 — 37.5 kg. of cedar bark are boiled with 4 lb. of caustic soda, 1 lb. soda ash, 1.5 kg. of lime and water, for 3 hr. The product is beaten and manufactured into paper without washing and sizing.-A.P.-C.

K-4 The Conversion of fibrous Raw Material to Pulp and Textile Fibers. CARL G. SCHWALBE. **Zellstoff U. Papier** 4, 73-76 (Apr. 1923). A general article on the chemical processes involved in the manufacture of pulp or textile fibers from seed fibers, bast fibers, grass and wood. The methods in which chlorine is used are reviewed. A commercially useful fibrous raw material must contain at least 30% cellulose; it should not be bulky and should be easy to collect. A plea is made for the application of the principles of colloid chemistry to the study of the chemical problems connected with the industry.-J.L.P.

K-4 The Economical Utilization of Old Paper. ANON. **Papierfabr.** 21, 177-180 (Apr. 1, 1923); 21, 189-191 (Apr. 8, 1923). A general article on the subject.-J.L.P.

BOARD OF TRADE SUMMARY OF SALES TAX

The Sales Tax Act has been issued by the Government. The Department of Customs & Excise will soon publish the regulations governing the methods of collecting the tax. The following admirable summary of the Act has been issued by the Montreal Board of Trade. The Act comes into force on Jan. 1 next:—

Definitions

Licensed Manufacturer. —A manufacturer or producer who manufactures or produces goods to the value of $10,000 or more during any fiscal year ending 31st March. It is necessary for every such manufacturer or producer to take out an annual license. The penalty for neglecting to do so is a sum not exceeding $1,000.

Licensed Wholesaler. —A wholesaler or jobber who sells not less than 50% of his total sales to a licensed manufacturer or producer to be used in, wrought into, or attached to, articles to be manufactured or produced for sale. A wholesaler or jobber may be granted a license on application to the Minister of Customs. Upon a wholesaler or jobber applying for a license it will be necessary for him to give security by bond of an incorporated guarantee company, whose bonds are acceptable to the Dominion Government, or by depositing Dominion of Canada bonds for an amount not less than twice the amount of the Sales Tax computed for a three months' period of total sales, such bond being security that the wholesaler or jobber shall keep adequate books or accounts and shall render true statements of sales to licensed manufacturers or producers and others.

Unlicensed Manufacturer. —One who does not manufacture or produce goods to the value of $10,000 during any fiscal year.

Unlicensed Wholesaler. —One who does not sell 50 % of his annual sales to a licensed manufacturer or who does not take out a license.

Sale Price. —The price before Sales Tax is added thereto.

General

Application. —A Sales Tax of 6 per cent is imposed on the sale price of all goods produced or manufactured in Canada, including the amount of Excise Duties when the goods are sold in bond, payable at the time of sale, and on the duty paid when taken out of warehouse. The Sales Tax shall not apply:

(*a*) On goods exported.

(*b*) On goods sold by one licensed manufacturer to another licensed manufacturer, or to a licensed wholesaler.

(*c*) On goods imported by a licensed manufacturer or by a licensed wholesaler.

(*d*) On goods, principally foodstuffs, which are exempted from the Sales Tax now in force and on the following additional items:— Manuscript; Raw Furs; Wool, not further prepared than washed; Drain Tiles for agricultural purposes; Syrups; enumerated in Customs Tariff, Item No. 140.

When goods are sold by a licensed manufacturer or a licensed wholesaler to an unlicensed wholesaler or jobber, the purchaser shall be furnished with a written invoice of the goods sold, which invoice shall state separately the amount of the Sales Tax.

When goods are sold by an unlicensed wholesaler or jobber to a licensed manufacturer, the purchaser shall be furnished with a written invoice which shall state separately the amount of the Sales Tax.

Refunds. —A refund or deduction of the amount of the Sales Tax may, with the consent of the wholesaler, jobber or dealer, be granted to a licensed manufacturer or producer on goods purchased from a wholesaler, jobber or other dealer if such goods are to be used in, wrought into, or attached to articles manufactured or produced for sale by a licensed manufacturer and which are articles subject to the Tax..

A refund of the amount of the Sales Tax may be granted to a licensed manufacturer or a licensed wholesaler in respect of goods which he has on hand on the first day of January, 1924, if such goods have been, or are to be used in, wrought into, or attached to articles to be manufactured or produced for sale and which are articles subject to the Sales Tax, such deduction not to exceed the amount actually paid by the said manufacturer or wholesaler, no deduction to be allowed in respect of such goods not accounted for prior to the thirty-first day of March, 1924. Claims for such deduction must be presented to the Department of Customs and Excise with complete evidence on or before the thirtieth day of June, 1924, otherwise same shall be rejected.

When goods are imported free of duty there may be granted a refund not exceeding 25% of the Sales Tax on similar goods after having shown to the Minister of Customs that such Canadian goods are at a disadvantage in competition with goods imported free of duty.

Deductions. —A deduction from the Sales Tax may be granted in respect of goods sold at a fixed price by bona fide contract and sale made before the twelfth day of May, 1923, and still in force at time of delivery of goods, provided that such deduction shall not exceed the difference between the amount of the Sales Tax calculated at the rate in force on the eleventh day of May, 1923, of the amount of the Sales Tax paid or to be payable under the present Act. No such deduction shall be made in respect of goods delivered after the thirty-first day of March, 1924. Claims for such deductions must be presented to the Department of Customs and Excise with complete evidence before the thirtieth day of June, 1924, otherwise the same shall be rejected.

BROMPTON CO. PAYS DIVIDEND ARREARS

Directors of the Brompton Pulp & Paper Co., at a meeting held at Sherbrooke, declared a dividend of four per cent payable August 15, to perferred share holders of record, July 31 and a dividend of two per cent, payable August 31, to shareholders of record July 31. This action clears off the arrears on the issue and takes care of the current quarter. Yesterday's declarations make a total of 14 per cent declared on the preferred stock since April 19, when an initial declaration of two per cent. was made on account of arrears, then amounting to 12 per cent. This development leaves the common stock, upon which five per cent was earned in 1922, in much enhanced position from a market point of view. The balance sheet produced last February showed a marked improvement in working capital position, current assets exceeding current liabilities by nearly two million dollars as of December 31.

PULP AND PAPER NEWS

The subject of pulpwood and woodpulp has been added to the list of questions to be discussed at the Imperial Economic Conference to be held in London in October.

Work has been commenced on a concrete dam at the St. Jerome mill of the Rolland Paper Company, Limited. This will replace a wooden dam and will give the Company additional water power.

Mr. C. Howard Smith, president of the Howard Smith Paper Mill, Limited, has returned from a holiday at Prouts Neck, Maine.

Mr. Geo. M. McKee was a visitor to Montreal last week. He states that the opening of his mill at Ogdensburg has been postponed until September, owing to the delay in the arrival of machinery.

The lumber trade of Eastern Canada has slackened, with prices of soft and hardwoods a little easier. American firms purchased heavily during the last three months, and are now slowing up. Having regard to the extensive buying of the new cut, and the probable demand during the balance of the year, it is held that prices will not react to any extent. The supplies are not excessive, and the mills are holding out for their prices.

The Western Quebec Paper Mills, Limited, Montreal has been incorporated with a capital of $250,000. The mill, which is under construction at St. Andrews, Que., will produce high grade, light weight papers.

Mr. S. J. B. Rolland, president of the Rolland Paper Company, Limited, returned to Montreal last week after a three months' visit to France, Switzerland and Italy. Mr. Rolland was accompanied by Mrs. and Miss Rolland. He states that business in France is slowly recovering; men are working hard—harder than before the war. The people are endeavoring to consume French commodities, in preference to buying foreign goods, in order to make the balance of trade favorable to their country. Switzerland is prosperous, while Italy has undergone a change which is distinctly favorable. The Government is now in strong hands, which have prevented a revolution. In Mr. Rolland's opinion, Canada could do more trade with Northern Italy, although he thinks that there is little or no opportunity for paper exports to Italy or to France.

Mr. Brian R. Perry, formerly with P. Lyall & Sons Construction Company, has joined the staff of the MacKinnon Steel Company, Limited, of Sherbrooke, Que. and is in charge of the Company's Sales Office at 404 New Birks Building, Montreal, from which office he will handle all business in Montreal and vicinity. Mr. Perry is a graduate of McGill University and has had extensive experience in construction work.

Excellent progress is being made on the new waxed paper plant of Bradshaws, Limited, which is being erected at the corner of Adrian Street and Symington Avenue, Toronto. W. J. Trimble, the contractor, expects to hand over the building by September 1 and within a short time after that the plant will be in operation.

Something new in the crepe paper novelty line is being handled by Davis & Henderson, manufacturing stationers, King Street, Toronto, in the form of sandals made from crepe tissue and they are meeting with ready sale. It is a line akin to the paper towels, the sandals being worn by milady as she issues from her bath and proceeds to her boudoir. The firm reports the novelty as catching on well and good sales are being made.

Toronto and Hamilton printers will send a team each to the Printers' International Baseball Tournament to be held at the Polo Grounds in New York City from August 4 to 11. Toronto was the only Canadian entry at last year's tournament in Cleveland. This year's team will be selected from the various union printing offices in the city and will include at least seven players now playing in the senior leagues of Toronto.

Secretary W. A. Sutherland, of the Toronto Typothetae, has sent a letter to the members with advice to job printers to collect sales tax, irrespective of the decision in the Crain case at Ottawa. Since the Government continues to demand payment of the tax and since it has been decided to appeal the Crain case, it is held that the tax should be collected until further notice is received to the contrary. It is stated that the Typothetae is acting under the advice of legal authority in the matter, which is of the opinion that in the event of the Government being successful in its appeal, sales tax on job printing done in the interval will be collectable.

The standard organization agreement between the U. T. A. and the Toronto Typothetae expired on July 31 and practically all of the members of the local body are remaining in the organization. The new plan provides for a perpetual organization with a six months resignation notice clause. The budget has been passed for the year by the special committee and the proportion of dues has been reduced from 2 2-5 per cent to a straight 2 per cent of the annual mechanical payroll. Up to the present over eighty per cent of the membership of the Toronto Typothetae have signed on under the new agreement.

Kenneth G. Toy, Western Ontario salesman for the Provincial Paper Mills, Limited, Toronto, is spending his vacation at the Wa Wa Inn on Georgian Bay.

George Allen, of the Buntin Reid Company, Limited, Toronto, has gone on a business trip to Winnipeg.

A letter received in Toronto from I. H. Weldon, President of the Provincial Paper Mills, Limited, states that he has arrived in England and is enjoying the sights of the Old Land.

Fred W. Snyder, of the Warren Manufacturing Company, New York, manufacturers of high grade manillas, jutes etc., was a business visitor in Toronto last week.

Gerard Falkenburg, salesman for Price Brothers, Limited, Quebec, called on the Toronto paper trade last week.

Paper Sales, Limited, 13 King Street west, Toronto, are sending out some very attractive direct mail advertising in the shape of a neat folder describing the virtues of Riegel's Special Tympan for which the Toronto firm are exclusive agents for Canada. Enclosed in the folder is a sample of the tympan with the invitation to the prospective customer to test as to its uniformity, strength and folding qualities. The sample itself has been folded with and against the grain which is a pretty good test, while it also stands up well when tried out for strength

and endurance. It is made by the Warren Manufacturing Company with mills at Riegelsville and Milford, New Jersey.

Word from C. E. French, who for several years was with the Howard Smith Paper Company's Toronto forces, states that he is now in Cuba and is on his way to South America, Mr. French is a special commissioner from the Howard Smith Company which has entered on the policy of developing a paper export market in various parts of the world.

George Davidson, manager of the Toronto office of the Howard Smith Paper Company, is spending his vacation at his summer home near Montreal.

Howard Whittemore, of Parsons & Whittemore, export paper agents, New York, was a business visitor in Toronto last week.

Mr. Hawker, of M. V. Dawson, Limited, Montreal, called on the Allan Paper Co., Limited, Simcoe Street, Toronto, last week.

The employing printers of Hamilton, Ont., held an enjoyable picnic at Bronte Beach on August 2nd when a large party of printers and their friends spent an enjoyable day with sports and an ald fashioned outing on the shore of Lake Ontario. The affair was in charge of a committee composed of George W. Wills, chairman, R. M. Moore, G. Richmond, Charles Gardner, and W. T. Turner.

Pirie Wyatt & Co., Limited, London, Eng., have advised the Canadian paper trade that they have changed their name to "St. Cuthbert's Paper Works, Ltd."

Otto Thorning, editor of the Cochrane Northland Post, was a caller at the office of H. B. Donovan of the Canada Paper Company, Toronto, last week.

The Copp Clark Co., Limited, picnic at, Victoria Park, Niagara Falls, Ont. on July 19 attracted several hundred of the employees, executives and friends, the party leaving Toronto in the morning and spending the entire day at the Falls. There was an elaborate program of athletic events for which attractive prizes were hung up and the whole affair was capably and efficiently managed by the various committees, the chairman of which was G. Dudley Thomas and the secretary T. A. Clough. A feature of preliminary arrangements was an extremely attractive program which will be treasured as a souvenir, illustrating in advance many of the incidents which are invariably the accompaniment of any well conducted outing.

Hon. Howard Ferguson, the new Premier of Ontario, made the announcement last week in Toronto that until his administration completes a general survey of Provincial timber resources, further timber sales in Ontario will be few and far between. He stated that the general survey —which is now complete as regards the Mississauga and some of the larger reserves—would have to be brought more clearly up-to-date before further distribution of timber resources could be countenanced. Only where the needs of a company were very apparent, he said, would the Government, for the present, at least, release any timber tracts. As regards the white pine blight, which at one time threatened to wipe out the Province's white pine resources, the Premier said that his information was that the disease had been arrested in its course across the timber country.

New Patent Regulations

Of considerable interest to pulp and paper machinery men are the new regulations of the Federal Patent Department which comes into effect on August 31, and which are more liberal in the consideration extended to inventors. The most important departures from the old legislation are extension of the time limit set for the manufacture of the patented device; provision for one partner in an invention to secure a patent upon it under certain conditions; making registration of patent attorneys obligatory and reducing the amount of fees and the danger of permitting the patent to lapse through failure to pay a second fee instalment. Some of the amendments are of a technical nature, but several are of wide interest because of the effect they will have upon the prospects of Canadian inventors seeking to reap benefit from their ingenuity and labors. The amendment making it necessary for all patent attorneys practising in Canada to register gives the Federal Department disciplinary powers over men in the profession who treat their clients unfairly or are guilty of other forms of unethical conduct.

May Change the Sales Tax

Officials of the department of customs and inland revenue at Ottawa, it is learned, are just now preparing regulations under which the amended sales tax will be administered, and in which the newsprint industry is interested. The amended act provides a flat rate of six per cent and provides for certain exemptions largely upon food stuffs and necessities of life. It does not come into effect until January 1, next year, and in the meantime the old act is in operation. Under the new act the Governor-in-Council has no power beyond the making of further exemptions from the incidence of the tax. This power he does possess. And in view of the strenuous protests against the manner in which the flat rate will militate against certain industries, and add to the cost of certain commodities, particularly newsprint, it is regarded as quite possible that when the tax goes into force next year some important changes will be made.

Bondholders of the Kaministiquia Pulp and Paper Company, now in liquidation, are being advised that a final distribution of assets equivalent to 9.15 per cent. of the face value of the bonds is being arranged, which added to the distribution of 20 per cent already made will make a total of 29.15 per cent. returned. The statement of receipts and disbursements shows a balance of $45,750 for the final distribution.

LINCOLN MILLS DELIGHTFUL PICNIC

On Monday, July 30th., the employees of the Lincoln Mills, Limited, held their annual picnic at Grimsby Beach. There were over five hundred people present, and although the weather was rather threatening in the morning, it cleared up before noon and the programme of sports was commenced.

The events were both numerous and varied. The most interesting of these however was the inter-mill girls softball game. As is quite often the case, the "dope" was upset and the Lincoln Mill won from the Lybster by a score of 16 to 5. This game was enjoyed by everyone, with the probable exception of Mr. Winlow the umpire, who was kept quite busy dodging the bat. It is reported that he squared himself with the losers by sending each a box of chocolates.

In men's softball the Lybster Mill succeeded in defeating both the Lincoln and Sulphite Mills.

A number of the Officials of the Company attended the picnic and took a keen interest in the events. The enthusiasm displayed by everyone present showed clearly that the picnic was a success and that it should be continued as an annual outing for the employees.

An iceberg in the pulpit cannot kindle a fire in the pews.

UNITED STATES NOTES

The Robert Gair Company, manufacturers of paperboard and paperboard products, report for the first six months of 1923 net profits of $1,200,000 before depreciation. Depreciation charges amounted to $284,355, leaving a balance of $874,746 for bond interest and other deductions.

Many of the paper mill workers in Holyoke, Mass, who are idle because of the strike of stationery firemen and the enforced shutdown of the mills, have made efforts to obtain work elsewhere in the belief that, owing to the firm demand of the mill owners, the shutdown is likely to be prolonged. The firemen seek an increase from 73 cents to 80 cents an hour.

Bids for the sale of waste paper accumulated in a year at the Brooklyn Navy Yard, New York, were opened last week at the Navy Yard Supply Department, but the names of the bidders and the amounts were not given out. It was said that about 200,000 pounds of waste paper is gathered at the yard in the course of a year. The successful bidder will begin making collections at the yard after January 1.

The development of a process for the production of a binder board of good quality, using wood pulp derived from hard wood, is one of the latest by products of the Ford Motor Company, according to an announcement made last week. The process pulp, it is claimed, has been successfully produced following experiments which have been in progress for months at the River Rouge plant near Detroit. The product is described as being .075 to .30 of an inch thick. The company plans to extend the operation of the "soda process" by which this product was made so that the pulp thus obtained may be transformed into paper. It expects to effect a large economy in lumber conservation by utilizing all scrap pieces of its body building plant at River Rouge. Scrap lumber is thrown into a machine in which it is chipped and then is carried by suction pipes to a digester. About nine tons of chips are placed in the digester at a time, of which 75 per cent are composed of maple, the remainder being of oak ash and other hard woods. To the chips is added a caustic solution of sufficient strength to reduce the chips to a fibre under seven hours of cooking at 110 pounds steam pressure. Then the fibre is pumped into washing machines. It emerges ready for paper manufacture.

In a case of striking bag makers in Long Island City, Justice Russell Benedict of the New York State Supreme Court, has granted a temporary injunction restraining the union from intimidating employees who have replaced them. "It might be a good thing," said Justice Benedict, "if both parties in all industrial controversies should be compelled by law to arbitrate their difference instead of resorting to strikes and lockouts. But such is not the law at the present time, and to make the refusal to arbitrate on the part of the employer the basis of a refusal by the court of equity to restrain unlawful acts on the part of the strikers would amount to giving the latter a license for any kind of violence."

A new paper-barrel machine is claimed to offer great possibilities in the production of containers. Though made of paper, its product is light, strong and durable, and can be made rapidly in a great variety of shapes. The machine consists essentially of a cylinder in two parts, which can be separated to produce barrels of different shapes and the two halves are rotated together on a horizontal axis. Tough chip board paper from a roll, passing through tension rollers and an adhesive coating device, is wound tightly on the cylinder in a pre-determined number of layers. The depth of the barrel is adjusted by the separation of the cylinder halves. When the required thickness has been laid on, a slitting wheel divides the paper into two equal portions, which are drawn apart, and the middle receives an additional winding to form the bilge. It is stated that the usual form can be produced at the rate of a barrel a minute. Silicate of soda, which sets so quickly that the barrels are ready for immediate use, is the usual adhesive. For liquids a special neutral coating is applied inside to prevent corrosion. Wooden heads are commonly provided.

A report from the United States consular agent in Peru relative to Peruvian imports of paper and paper products from the United States show that in April the total of such imports was topped by the total coming from Germany whose shipments were far ahead of those coming from all other countries during the month. In March the imports from the United States had exceeded those of other countries. The April figures indicate that out of a total importation of 2,970 cases, 2,043 cases originated in Germany. Statistics for the first four months of 1923 show paper imports distributed as follows: Germany 4,561 cases; United States 1,463 cases; Belgium, 516 cases, and Great Britain, 296 cases.

MR G. L. MATTICE

Announcement is made that Mr. G. L. Mattice, whose photograph we reproduce herewith has been appointed



manager of the Montreal Office of Lockwood, Greene and Co. of Canada Ltd., following the resignation of Mr. Ewart G. Horne.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, August 7.—The past week has witnessed a slight revival in the local paper trade. While business is undoubtedly of a spotty character, as a whole it is fairly satisfactory. It is governed by many factors outside the control of either manufacturers or jobbers; some of the latter are of the opinion that we have not yet reached the stage where no new sources of consumption can be found, if salesmen are intelligent enough to dig up these prospects.

Although some American mills expect that the demand for newsprint will soon fall off, this is not the view held here. The indications are, in fact, that the call will be maintained through the year. All the mills are busy, and as we have pointed out, individual companies are making records as to production.

Figures compiled by the "Official Labor Gazette" for July show increased activity in the pulp and paper industry, while the statistics relating to the manufacture of paper products and the printing and publishing sections were somewhat less encouraging. The returns compiled from 448 firms whose staffs aggregated 53,513 persons, were larger by 1,776 workers or 3.4 per cent better than shown in the previous report. About 70 per cent of the expansion occurred in the Province of Quebec, while an improvement was also recorded in Ontario and British Columbia. The tendency in other Provinces was downwards. Employment during the month under review was better than in any period since 1920.

The imports of paper into Canada during June showed an increase over those during the same month last year, the figures being $813,058 and $640,592 respectively. Book and writing papers came in much smaller volume, although the value was higher. In June last we imported 486,468 pounds valued at $42,616 compared with 638,837 pounds and $41,607 in June, 1922. In writing paper the imports were considerably higher, the figures being 950,770 pounds and $63 551 in June last and 421,464 pounds and $22,760 in 1922. Roofing and building papers went up from $30,751 in 1922 to $41,279 in 1923. The buying of bonds and ledgers, writing and envelope papers (uncut) was nearly all from American mills. The imports of book and printing papers, not coated, from the United Kingdom decreased from $13,985 in June of last year to $10,891 in June 1923, whilst those from the United States rose from $27,622 to $29,218. Envelopes from the U. K. increased from 1,061 to $1,947, and those from the U. S. increased from $10,864 to $17,005.

There is no change of importance in the pulp department. Groundwood continues to be in good demand, with comparatively little offering; while bleached sulphite remains on a stable basis at old prices.

The representative of a Montreal firm of pulpwood dealers has just returned from a visit to the paper mills in New England. He states that he found general scepticism as to whether the Canadian Government meant business with regard to a pulpwood embargo; the announcements made at Ottawa were, he said, looked upon as a notice that Canada had an effective weapon when it came to further tariff bargaining. The mills did not appear to be in any hurry to buy further extensive supplies of pulpwood—they had no fear that an embargo would come into effect for a long time — if ever — and the speech of Mr. King at opening of the Imperial Forestry Conference appears to confirm the sceptical views of the mill men in those States.

Ontario Market News

The general mid-summer lull in business is reflected in the pulp and paper trade in Ontario with the wholesalers and consuming public showing a hesitancy in buying in other than rather meagre quantities. Notwithstanding this condition, however, there is no disposition to take a gloomy view of the situation. In fact the trade as a whole is optimistic and while trade in some pulp and paper lines is unusually light in Ontario just now, it is the general belief that the closing of the holiday season will see things back to normal with the companies doing better business than ever. There are already signs that improved conditions are on the way. Book paper mills report an excellent demand for their product and are running full, as are also the coated paper mills. Newsprint mills continue very active, while on the other hand there is a comparatively light demand for bonds, ledgers and writings Wrapping paper and paper bag manufacturers and the makers of toilets and tissues reports demand for their products as generally improving. The converting trade is none too brisk just now according to the testimony of manufacturing stationers, although the envelope end of the trade is keeping up fairly well. There is only a fair demand for waxed paper products and glassing and the same may be said, from a jobbers standpoint, of blanks, blotting paper and kindred lines. There has been some improvement in the paper box manufacturing line and in this connection the views of S. J. Frame, Secretary of the Canadian Paper Box Manufacturers' Association, Toronto, in a circular just issued to the trade, are of interest. He says: "As is well known, the United States during the last twelve months, characteristically going to extremes upwards or downwards, somewhat abused the improved conditions, such abuse resulting in a minor inflation causing a slowing up in buying. Canada, with a much smaller population, is always influenced by the United States market, but inasmuch as we in Canada have come along steadily during the past twelve months, maintaining stability without going to extremes, in my humble opinion the quietness in Canadian trade to a great extent arises from the sentimental influence of the United States situation. Apart from the prices on farm commodities being out of alignment with other goods, a condition which is world-wide, the conditions in Canada generally speaking being sound, with good crops in sight, it would appear that, while trade will probably remain quiet during the summer months, Canada will not for any great length of time be seriously disturbed by any setback in the United States, and the commencement of the fall season will

see a considerable revival in the demand in this country. Whether or not this diagnosis is correct, there is no doubt, taking into consideration that this is usually a quiet season of the year and that any tendency toward ragged nerves arising from such quietness is liable to be aggravated by the hot weather, the cultivation of patience, calmness and restraint is necessary. Such qualities are called for at all times but perhaps in a greater degree during the quiet hot months than in the other parts of the year. It is but a truism to say that parallel with the exercise of patience, calmness and restraint is the maintenance of equilibrium and a broad perspective, and with such a condition among the members of the various associations, they will travel steadily and safely along as they have done during the past two or three years when conditions were much more uncertain than they are today."

RISE IN COATED BOOK. —New prices issued by the trade in Toronto show an increase in the price of coated book created by a slight re-adjustment of terms. The increase is about one cent a pound. No. 1 coated book is now quoted at 24½c: No. 2, 23c: No. 3, 22c long price list, these prices being subject to discount from long list as well as for quantity shipments. Both manufacturers and jobbers report a fair demand for this line of paper.

PULP. —There is no material change in the general pulp situation. The pulp market in the United States is more or less in an unsettled condition and this is having its effect on the Ontario market in the way of lessened demand and keeping the price quotations down. All of the newsprint mills, however, are active, which is responsible for a rather firm tone to groundwood pulp which is still quoted at from $38.00 to $40.00 per ton at the mill. Bleached sulphite is selling at from $80.00 to $95.00: unbleached at from $60.00 to $70.00 and news grade at from $60.00 to $65.00.

RAG AND PAPER STOCKS. —In both the rag and paper stock markets unsettled conditions prevail although a slightly firm tone is noticed in the waste paper department. Due to low prices dealers report collections light and the dealers are not quoting for either rag or paper stock except from day to day.

NEW YORK MARKETS

New York, August 4 — (Special Correspondence)— Prevailing activity in the paper industry is chiefly of seasonal character. Consumers are placing orders principally for supplies directly required and most transactions therefore involve rather small amounts of paper, yet in the aggregate the movement into consuming channels is of larger volume than is ordinarily noted at this time of the year, while the general condition of the industry is fully as healthy as has ever been the case.

There is no question but that a majority of paper manufacturers could readily accommodate more business. This seems proved by the reports of jobbers, who state that in frequent cases mills frankly admit that they are seeking orders and that, to meet competition, they are now and then granting price concessions to land the business. There is no such thing as any concerted downward movement of prices. Market levels are such as to induce buying, if anything, since paper prices, in comparison with those of any other manufactured product, are probably more reasonable, and yet there are of course always some buyers who

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look for supplies at cheaper rates, and it is these customers who are occasionally persuading manufacturers to recede from their quoted prices slightly.

The strike of firemen in the fine paper mills in Holyoke and surrounding mill centres continues. Mill owners are apparently determined not to give in to the strikers. There is only a matter of something like 70 odd firemen who have gone on strike and who are holding up operations in the writing paper plants, but the mill proprietors realize that if they grant the wage increase asked they will be sooner or later obliged to give the same increase to the other three thousand workers in their factories. Therefore, the mill owners are holding to their guns, and it is reported that the labor element is beginning to become restless in its idleness, and authoritatives advices reaching New York are to the effect that the difficulty will be smoothed over in the next few days.

Thus far the shutdown of fine paper mills in New England has had no perceptible influence on the writing paper market. Manufacturers are filling orders from stock and appear to have sufficient paper on hand to cary them along for a while yet. Prices are naturally firm, and any change that might take place as a result of the curtailed production would be upward, so that jobbers or anyone having bonds and ledgers in stock are not pressing buyers to place orders.

The newsprint situation continues exceedingly firm. Consumption at the moment is lighter than it was a few weeks ago, but this is a seasonal development which will hardly keep up and which is causing no concern to manufacturers. It is the midsummer lull when advertising of the display character drops off somewhat, and publishers consequently cut down the number of pages in their issues. Newsprint mills have nothing to worry about because first the decreased use of print paper will not likely continue, and second they have practically their entire production for some months ahead sold on contract and publishers are taking paper as rapidly as it is shipped.

Book paper mills are fairly busy. The probabilities are they are enjoying a livelier market for their product than usually at this period of the year, and inquiry for large tonnage is constantly increasing. Prices are somewhat irregular, this being due to the action of some mills in shading prices to secure certain orders. Machine finished book is quoted at an average of 6.50 cents a pound f.o.b. New York, although some grades are reported available down to 6 cents, whereas extra qualities are held at 6.75 cents.

An uptrend in prices seems to be making for greater activity in boards. Waste paper is jumping in cost at a rapid rate, and board manufacturers have been obliged to boost quotations on their product, with the result a good many consumers have come into the market to cover requirements. Boards are strengthening every day, and it begins to look as if they will sell at stiff prices during the customary period of brisk business in board along about September. Present prices range from $60 upwards per ton f.o.b. New York for plain chip, and around $65 for news board. These figures represent only a slight advance from recent bottom market levels but there is a strong tendency, and if raw material keeps on prevailing levels there seems little doubt that board values will rise further.

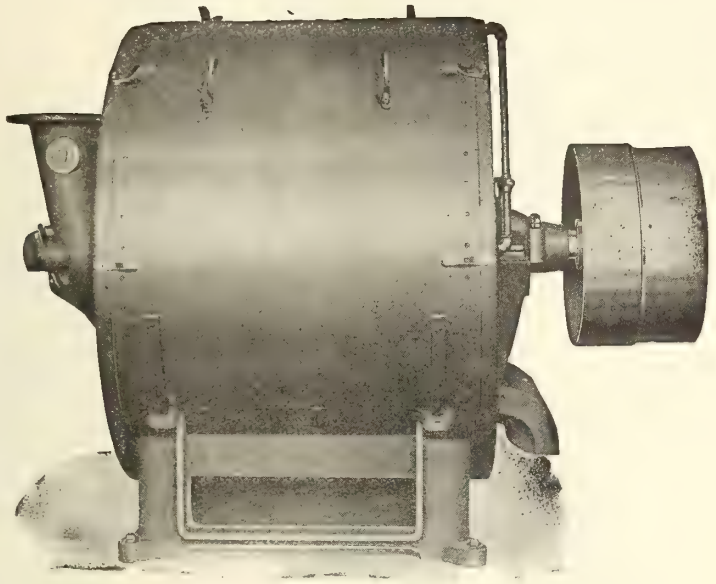
GROUND WOOD — Reports generally tell of ground wood firming in price and of the market gradually assuming a stronger position. This is the season when grinders are hampered in their operations by low water and, having less than usual stocks of pulp on hand and being well supplied with orders, they are hesitant about disposing of unsold pulp in the fear that they may have trouble covering their commitments later in the summer. Prices asked therefore are firm, and on the rise. Domestic grinders are reported quoting around $37 and $38 a ton f.o.b. pulp mills for spruce ground wood for prompt shipment, and in cases where consumers are situated near to producing centres up to $40 is quoted. Moreover, there is no large tonnage of pulp offered at these prices. Newsprint mills are using ground wood at a steady pace, and other consumers are buying in fairly large volume, with the probabilities in favor of a heavier demand from board manufacturers because of the sharp increase in waste paper costs.

CHEMICAL PULP — With the possible exception of bleached sulphite and soda pulp, all grades of chemical wood pulp are holding firm in price under a comparatively good demand. Papermakers are unquestionably buying in a cautious manner; there is no disposition shown to absorb other than supplies actually and directly needed, and yet the movement of pulp is aggregately far from light; in fact, it is probably better than an average for this time of the year.

Due to a lack of business, producers of bleached sulphite are said to be granting price concessions. The largest manufacturers in this country and in Canada are reported quoting 5 cents a pound at pulp mills for bleached sulphite of bond paper quality and 4.50 cents for book grade, yet it is stated on high authority that some orders are being accepted at slight reductions. Foreign bleached sulphite is quoted at an average of 4.50 cents per pound on the dock at New York for No. 1 pulp, though some supply is available at 4.25 cents and extra strong pulp is held at 4.75 cents. Unbleached sulphite is firm at around 3.50 cents a pound ex dock for prime foreign sulphite of strong quality, with sales at this price basis made and with importers reporting sales in exceptional cases at 3.55 cents. Soda pulp has eased off a trifle. Two of the principal producers on this Continent are reported quoting 4 cents a pound at pulp mills but others are booking orders at 3.75 cents f.o.b. shipping points.

The feeling persists among sellers of pulp in New York, and importers in particular, that higher prices will be seen this fall. If consumption approximates normal during the last few months of the year, it is believed paper manufacturers will be actively in the market as buyers, and, not having usual supplies in Scandinavia to draw on, market levels will rise. It is declared that offerings by Swedish manufacturers are of small volume, as a rule, and that it is pretty well assured mills in Scandinavia are well sold up for the rest of the year.

PAPER STOCK. — Prices of old paper continue to advance and the market is very nearly in a booming condition. It is stated on good authority that consuming mills are not buying in any unusual volume for this period of the year; that they are purposely confining orders to supplies directly required, and yet the movement of prices is sharply upward. This would seem based more on circumstances at the supply end rather than at the consuming end, since packers claim to be getting only a small percentage of their normal amounts of old paper because of high labor costs and the resultant desertion of many paper stock collectors for other employment.



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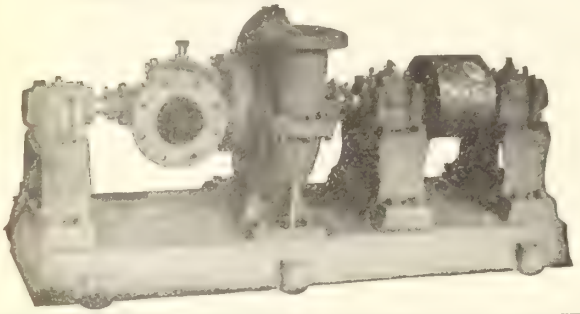
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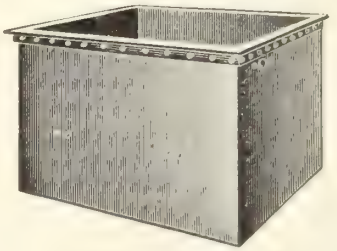
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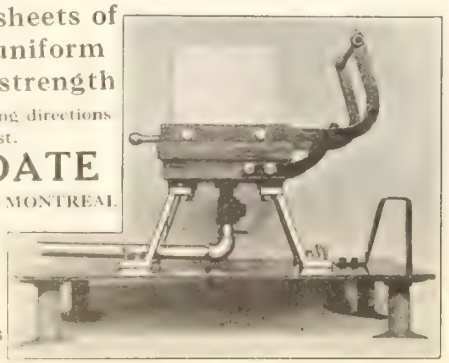
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Derricks:
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McKinnon Steel Co., Ltd.

Diaphragms, Rubber:
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Dunlop Tire & Rubber Goods Co., Ltd.

Diffusers:
MacKinnon Steel Co., Ltd.

Digesters:
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Can. Des Moines Steel Co., Ltd.
Dominion Engineering Works, Ltd.
Eng. & Machine Works of Can., Ltd.
Hamilton Co., Ltd., Wm.
Hendrick Mfg. Co.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Vulcan Iron Works, Ltd.
Walsh Plate & Structural Works, Ltd.

Digester Fittings:
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Hamilton, William Co., Ltd.
Hydraulic Machinery Co., Ltd.
Northern Foundry & Machine Co., Ltd.
McAvity, T. & Sons, Ltd.

Digester Lining:
Beveridge Supply Co., Ltd.
Stebbins Eng. & Mfg. Co.

Digester Brick:
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Stebbins Eng. & Mfg. Co.

Driving Apparatus:
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John Date.
The Jeffrey Mfg. Co.

Doctor Blades:
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Pulp & Paper Mill Accessories, Ltd.

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John C. Christie Co.

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Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Canadian Sirocco Co., Ltd.
Dominion Engineering Works, Ltd.
Hamilton, William Co., Ltd.
Hendrick, Manufacturing Co.
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Ross, J. O. Engineering Co.
B. F. Sturtevant Co. of Canada, Ltd.

Dynamos:
Canadian Fairbanks-Morse Co., Ltd.
Canadian General Electric Co., Ltd.
Harland Engineering Co., Ltd.

Economisers:
Sturtevant, B. F. Co. of Canada, Ltd.

Electric Apparatus:
Canadian Fairbanks-Morse Co., Ltd.
Can. General Electric Co., Ltd.
Harland Engineering Co., Ltd.
Northern Electric Co., Ltd.

Electrical Condensers:
Griswold & Co.

Electrical Supplies:
Canadian General Electric Co., Ltd.
Can. Johns-Manville Co., Ltd.
Northern Electric Co., Ltd.

Elevators:
Link-Belt Limited.
The Jeffrey Mfg. Co.

Engines:
Canadian Fairbanks-Morse Co., Ltd.
Can. Sirocco Co., Ltd.
Goldie & McCulloch Co., Ltd.
Goold Shapley & Muir Co., Ltd.
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Lacey, James D. & Co.
Sewall, J. W.

Engineers — Electrical:
Montabone, A. J. F.

Engineers — Soda Pulp Mill:
Herbert S. Kimball.

Engineers — Steam:
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Combe, F. A.
Montabone, A. J. F.
Taylor, Ltd., H. S.

Engineers — Ventilating:
Burroughs, Chas. W.
Management Engineering & Development Co.
Reed Co., Ltd., Geo. W.
Ross, J. O. Engineering Co.
Taylor, Ltd., H. S.

Engineers — Consulting:
Carey, Jas. L.
Combustion Engineering Corporation, Limited.
Ferguson, Hardy
Hamilton Gear & Machine Co.
Hardy, George.
Jenssen, G. D. and Co.
Kimball, Herbert S.
Management Engineering & Development Co.
Montabone, A. J. F.
Sewell, James W.
Stebbins Eng. & Mfg. Co.
Taylor, Ltd., H. S.
Wallace, Jos. H. & Co.
Williams, F. M.

Engineers — Chemical:
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Exhausters:
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Can. Sirocco Co., Ltd.
The Jeffrey Mfg. Co.
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Sherbrooke Machinery Co., Ltd.
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Penmans, Ltd.
Porritts & Spencer, Ltd.
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Warwick Woollen Mills, Ltd.
Whyte, Wm.

Fence — Wire:
Frost Steel & Wire Co., Ltd.

Fibre Vulcanized:
Canadian Fairbanks-Morse Co., Ltd
Diamond State Fibre, Can., Ltd.
Hydraulic Machinery Co., Ltd.
Goold, Shapley & Muir Co., Ltd.
McKinnon Steel Co., Ltd.

Flag Poles (Steel):
Ontario Wind Engine & Pump Co., Ltd.

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Hydraulic Machinery Co., Ltd.
Norwood Engineering Co.

Fire Brick:
Alberene Stone Co.
Beveridge Supply Co., Ltd.
Elk Fire Brick Co.
Pulp & Paper Mill Accessories, Ltd.

Fire Clay:
Elk Fire Brick Co.

Fire Doors:
Reed Co., Ltd., Geo. W.

Fire Fighting Apparatus:
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Norwood Engineering Co.

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Bailey Meter Co., Ltd.

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Crane Co., Ltd.

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Norwood Engineering Co.

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Hydraulic Machinery Co., Ltd.
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Port Arthur Shipbuilding Co., Ltd.
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Northern Electric Co., Ltd.

Iron Castings:
See **Castings:**

Jordan Castings:
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Port Arthur Shipbuilding Co., Ltd.

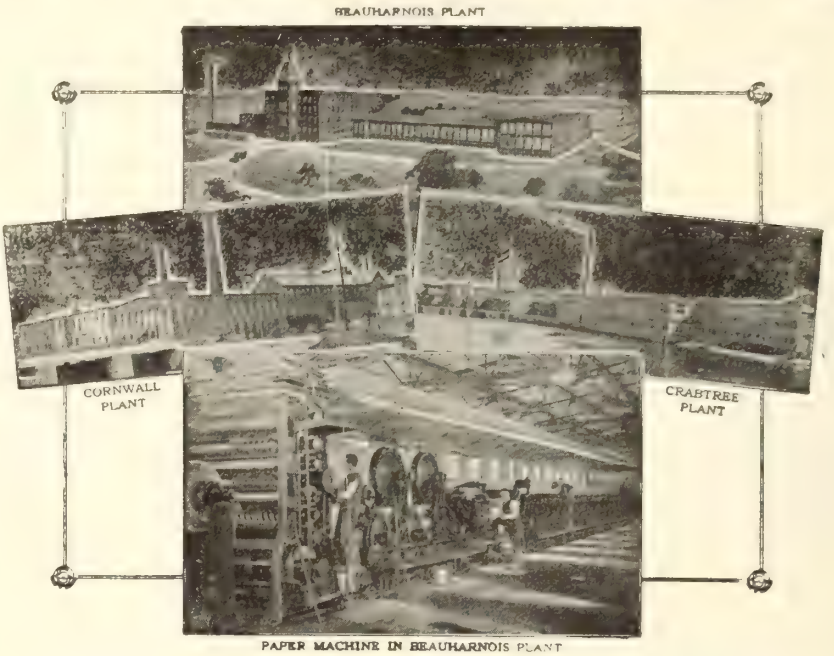
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Pulp & Paper Mill Accessories, Ltd.
Waterous Engine Works Co., Ltd.

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Meters — Flow:
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Meters — Gas:
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Meters — Oil:
Bailey Meter Co., Ltd.

Meters, Steam:
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Canadian Fairbanks-Morse Co., Ltd.
The Bristol Co.
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Harland Engineering Co., Ltd.
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Canadian General Electric Co., Ltd.
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Voorhees Rubber Mfg. Co. of Canada, Limited.

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Beveridge Supply Co., Ltd.
Brompton Pulp & Paper Co., Ltd.
Dryden Pulp and Paper Co., Ltd.
Gottesman & Co., Inc.
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Victoria Paper & Twine Co., Ltd.
Wayagamack Pulp & Paper Co., Ltd.

Lumber Pulp & Paper Co.
Brompton Pulp & Paper Co.
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Beveridge Supply Co., Ltd.
Brompton Pulp & Paper Co., Ltd.
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Eddy E. B. & Co., Ltd.
Ford, J. & Co.
M. Gottesman & Co.
Laurentide Co., Ltd.
Mead, Patton & Co., Inc.
Price Bros & Co., Ltd.
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Ford, J. & Co.
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Can. Vegetable Parchment Co., Ltd.
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Victoria Paper & Twine Co., Ltd.

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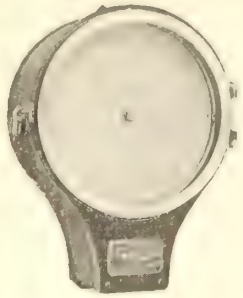
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Acer, J. A. & Co., Ltd.
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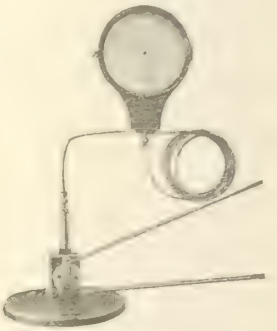
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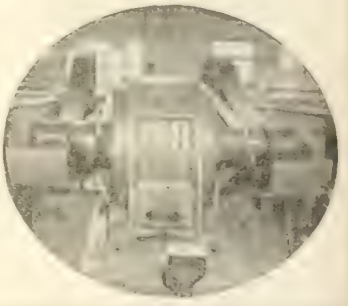


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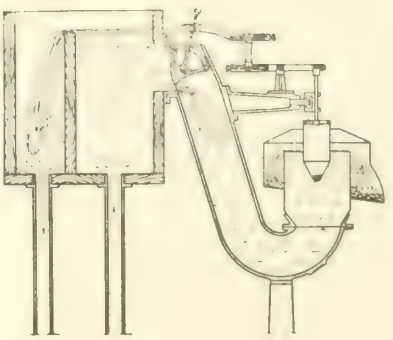
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Bertrams, Ltd.
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Norwood Engineering Co.
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Pusey & Jones Co.
Sherbrooke Machinery Co., Ltd.
Stebbins Eng. & Mfg. Co.
Ticonderoga Machine Works
Walsh Plate & Structural Works, Ltd.
Walmsley, Charles, & Co. (Can.), Ltd.
Waterous Engine Works Co., Ltd.
Westbye, P. P.

Paper Stock:
Pulp & Paper Mill Accessories, Ltd.

Paper Testers:
Canadian Fairbanks-Morse Co., Ltd.
Waterous Engine Works Co., Ltd.

Penstocks:
Dominion Engineering Works, Ltd.
Hamilton, William Co., Ltd.
Hendrick Manufacturing Co.
MacKinnon Steel Co., Ltd.
Walsh Plate & Structural Works, Ltd.
White, W. H.

Penstocks, Wood Stave:
Canadian Pipe Company, Ltd.
Pacific Coast Pipe Co., Ltd.
White, W. H.

Pillow Blocks:
Canadian Fairbanks-Morse Co., Ltd.
Link-Belt Limited.
Port Arthur Shipbuilding Co., Ltd.
Victoria Foundry Co., Ltd.
Waterous Engine Works Co., Ltd.

Pipe — Riveted:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.

Pipe — Wood Stave:
Canadian Pipe Company, Ltd.

Pipes — Brass & Copper:
Tallman Brass & Metal Co., Ltd.

Piping — High Pressure:
Canadian Fairbanks-Morse Co., Ltd.
Crane, Ltd.
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Northern Foundry & Machine Co.

Piping Hydraulic:
Canadian Fairbanks-Morse Co., Ltd.
Dodge Manufacturing Co.
Hydraulic Machinery Co., Ltd.

Plate and Tank Works:
Can. Des Moines Steel Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Dominion Engineering Works, Ltd.
Goldie & McCulloch Co., Ltd.
Hamilton, William Co., Ltd.
Hendrick Manufacturing Co.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Walsh Plate & Structural Works, Ltd
Waterous Engine Works Co., Ltd.

Plates — Calenders:
Norwood Engineering Co.

Pneumatic Collecting and Conveying Systems:
Sturtevant, B. F. Co. of Canada, Ltd.

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Sherbrooke Machinery Co., Ltd.
Waterous Engine Works Co., Ltd.

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Canadian Ingersoll-Rand Co., Ltd.

Power Factor Correcting Devices:
Griswold & Co.

Power Condensers:
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Hydraulic Machinery Co., Ltd.
Northern Foundry & Machine Co.
Port Arthur Shipbuilding Co., Ltd.

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Dominion Engineering Works, Ltd.
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Sherbrooke Machinery C., Ltd.
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Pressure Tanks:
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Pulleys:
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Canadian Fairbanks-Morse Co., Ltd.
Canadian Link-Belt Co., Ltd.
Dominion Engineering Works, Ltd.
Hamilton, William Co., Ltd.
Northern Foundry & Machine Co., Ltd
Port Arthur Shipbuilding Co., Ltd.
Victoria Foundry Co., Ltd.
Waterous Engine Works, Co. ,Ltd.

Pulp Slashers:
Hamilton, William Co., Ltd.

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Lombard & Co.
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Pulp & Paper Mill Accessories, Ltd.
Smallwood Stone Co.
Smallwood-Low Stone Co.

Pulp Stone Burrs:
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Pulp Thickeners:
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Port Arthur Shipbuilding Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.
Sherbrooke Machinery Co., Ltd.

Pulp Wood:
Crittsinger, Burt C.

Pumps:
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Canadian Ingersoll-Rand Co., Ltd.
Dominion Engineering Works, Ltd.
Goldie & McCulloch Co., Ltd.
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Northern Foundry & Machine Co.
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Peacock Bros., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Sherbrooke Machinery Co., Ltd.
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Waterous Engine Works, Co., Ltd.
Weir, Ltd., G. & J.

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Canadian Fairbanks-Morse Co., Ltd.
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Rag Cutter Knives:
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Rails: — Re-laying:
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Gartshore, J. J.

Recording Ammeters:
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Recording Instruments:
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The Bristol Co.
Peacock Bros., Ltd.

Recording Thermometers:
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Recording Wattmeters:
The Bristol Co.

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Boving Hydraulic & Eng. Co., Ltd.
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Port Arthur Shipbuilding Co., Ltd.
Sherbrooke Machinery Co., Ltd.
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Waterous Engine Works, Co., Ltd.

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Russel Brothers.

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Walmsley, Charles, & Co. (Can.), Ltd.
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Westbye, P. P.

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Waterous Engine Works, Co., Ltd.

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ALPHABETICAL LIST OF ADVERTISERS

See Classified List on Page 73.

Unpaged advertisements appear in every other issue.

A

Alberene Stone Co., Ltd.
Abitibi Power & Paper Co. Ltd. 84
Acer, J. H. A. & Co., Ltd. 74
American Voith Contact Co., Inc.
American Stone Co. 24
American Woodpulp Corporation 24
Ayers, Limited 11

B

Babcock & Wilcox
Barrett & Co., Ltd., The 6
Barber, W. J. & Co., Ltd.
Bathurst Company, Ltd. 82
Bailey Meter Co., Ltd. 19
Bates & Innes, Ltd. 25
Bemis Manufacturing Associates
Bertrams, Limited 28
Belgo Paper Co., Ltd., The 82
Beveridge Supply Co., Ltd.
Black-Clawson Co., The
Bolton, John W. & Sons, Inc. 26
Boving, Hydraulic & Engineering Company, Ltd. 12
Bristol Co., The 80
Brompton Pulp & Paper Co., Ltd. 82
Burgess, E. T.

C

Canada Foundries & Forgnigs, Ltd. 72
Canada Metal Co., Ltd., The 28
Cameron Machine Co. 3
Canadian Combustion Co., Ltd. 12
Canadian Barker Co. 10
Canadian Des Moines Steel Co., Ltd. 87
Canadian Elixman Co., Ltd. 16
Canadian Equipment Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd. 32
Canadian Ingersoll-Rand Co., Ltd.
Canadian Johns-Manville Co., Ltd.
Canadian Milk Products, Ltd. 18
Canadian Nashua Paper Co., Ltd. 86
Canadian Paperboard Co., Ltd. 24
Canadian Pipe Co., Ltd.
Canadian Robert Dollar Co., Ltd.
Canadian Sirocco Co., Ltd.
Canadian SKF Co., Ltd.
Canadian Vegetable Parchment Co., Limited 74
Canadian Vickers, Ltd. 8
Canadian Westinghouse Co., Ltd. 28
Capital Wire Cloth & Mfg. Co., Ltd. 26
Carey, Jas. L. 22
Christie, George, Ltd.
Clayton, Neil & Jones, Ltd.
Combustion Engineering Corporation Limited
Crane, Limited
Crittsinger, Burt Co., Inc.
Cleveland Stone Co., The

D

Date, John
Dept. of Lands, Forests & Mines Ontario
Dodge Mfg. Co. of Canada, Ltd.
Dominion Belting Co., Ltd.
Dominion Engineering Works, Ltd.
Dominion Oxygen Co., Ltd.
Donnacona Paper Co., Ltd., The 24
Don Valley Paper Co., Ltd. The 24
Dryden Paper Co., Ltd. 24
Dunlop Tire & Rubber
Dunham, C. A. Co.

E

Elixman Paper Core Co., Inc. 16
Elk Fire Brick Co. of Canada, Ltd. 30
English China Clays, Ltd.
Engineering & Machine Works of Canada, Ltd.

F

Ferguson, H. S. 22
Ford, J. & Co.
Foundation Co., Ltd. 22

G

Galt Knife Co., Ltd.
Garden City Paper Mills, Ltd. 7
Geigy Co., Inc. 27
Goldie & McCulloch Co., Ltd. 89
Goold, Shapley & Muir Co., Ltd.
Gottesman, M. & Co 29
Grasselli Chemical Co., Ltd., The 30
Graton & Knight Mfg. Co., Ltd. 21
Gutta Percha & Rubber, Ltd.

H

Hamblet Machine Co.
Hamilton, Wm. Co. of Canada, Ltd.
Hamilton Gear & Machine Co. 72
Hans Renold of Canada, Ltd.
Hardy, George F. 22
Harland Engineering Co. of Canada, Limited 1
Hay Knife Co., Ltd., Peter
Hendrick Mfg. Co. 21
Hercules Powder Co. 19
Holliday, L. B. & Co., Ltd. 78
Huestis, A. M. 86
Hydraulic Machinery Co., Ltd. 2

I

Industrial Engineering Co., Ltd.
International Business Machines Co., Limited. 23
International Pulp Stone Co., The 27
Interlake Tissue Mills Co., Ltd. 17

J

Jenkins Bros., Ltd. 25
Jenssen Co., G. D. 23
Johnson Wire Works, Ltd., The 30
Jones & Glassco, Regd. 80

K

Kalbfleisch Corporation, The 86
Kander Paper Stock Co., Ltd., The 24
Kenwood Mills, Ltd. 7
Kimball, Herbert S. 23
Kingsbury Machine Works
Klipstein, A. & Co., Ltd. 18

L

Lacey, James D. & Co.
Lagerloef Trading Co. 67
Langston, Samuel M. Co. 27
Laurentide Co., Ltd. 84
Lawrence Machine Co. 72
Link-Belt Limited
Lombard & Co. Inc. 27

M

Management Engineering & Development Co., The 23
Mead, Patton & Co., Ltd.
McArthur, Irwin, Ltd. 20
McAvity, T. & Co., Ltd. 32
McKinnon Steel Co., Ltd. 22
Mills Works & Machinery, Ltd. 80
Miramichi Quarry Co., Ltd., The 21
Montabone, J. A. F. 22
Montreal Locomotive Works, Ltd.
Morrison, J. L. Co., The

N

National Paper Stock Co., The 24
Niagara Wire Weaving Co., Ltd. The 74
Northern Crane Works, Ltd.
Northern Electric Co., Ltd. 5
Northern Foundry & Machine Co.
Norwood Engineering Co. of Canada, Limited 26

O

Oliver Continuous Filter Co.
Ontario Wind Engine & Pump Co., Limited

P

Pacific Coast Pipe Co., Ltd.
Peacock Brothers, Ltd.
Penmans Limited 20
Port Arthur Shipbuilding Co., Ltd. 29
Porritts & Spencer Co., Ltd.
Price Bros. & Co., Ltd. 76
Price & Pierce, Ltd. 82
Provincial Paper Mills, Ltd.
Pusey & Jones Co., The 69
Pulp & Paper Mill Accessories, Ltd. 85
Pulp & Paper Trading Co.

Q

Quarries, C. & M. Co. 72

R

Reed, Geo. W. & Co., Ltd.
Relph, Darwen & Pearce
Rolland Paper Co., Ltd.
Ross Engineering of Canada Ltd. 27
Russell Brothers 26

S

Sadler & Haworth
Sewall, Jas. W. 22
Sherbrooke Machinery Co. 9
Smallwood Stone Co., The 24
Smallwood Low Stone Co., The 27
Smith Howard Paper Mills, Ltd. 78
Spanish River Pulp & Paper Mills, Limited 86
Steel Trough & Machine Co., Ltd. 72
Sterling Electrical Co. 23
Stebbins Engineering & Mfg. Co. 17
St. Maurice Paper Co., Ltd.
Sturtevant Co. of aCnada, Ltd. 22
Swenson Evaporator Co. 72

T

Tallman, Brass & Metal, Ltd. 74
Taylor, J. A.
Taylor, H. S., Ltd. 23
Texas Gulf Sulphur Co.
Ticonderoga Machine Works
Tippett & Co., Ltd. 4
Tyler, W. S. & Co., The 27
Trimbey Machine Works

U

Underfeed Stoker Co. of Can., Ltd.
Union Screen Plate Co. of Canada, Limited 87
Union Sulphur Co., The 20
United Wire Works, Ltd. 4

V

Vera Chemical Co. of Canada, Ltd. 72
Voorhees Rubber Mfg. Co. of Canada, Limited 23

W

Wallace, John H. W. & Co., Ltd. 22
Wardlaw, T. D. & Son 27
Walmsley, Charles & Co. Ltd. 14-15
Warren, Kenneth L. 22
Warwick Woollen Mills, Ltd. 28
Watford Engineering Works, Ltd. 13
Waterous Engine Works 90
Wayagamack Pulp and Paper Co., Limited 70-71
Weir, G. & J. (Canada), Ltd.
Westbye, P. P. 69
White, W. H. 22
Whyte, William 23
Wilson Patterson Co.

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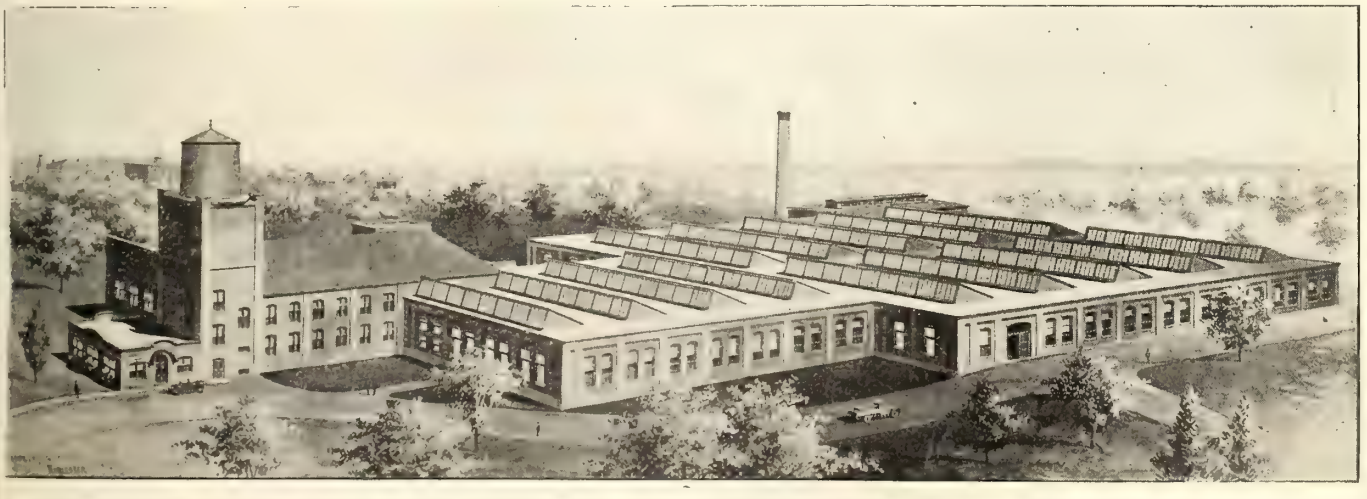
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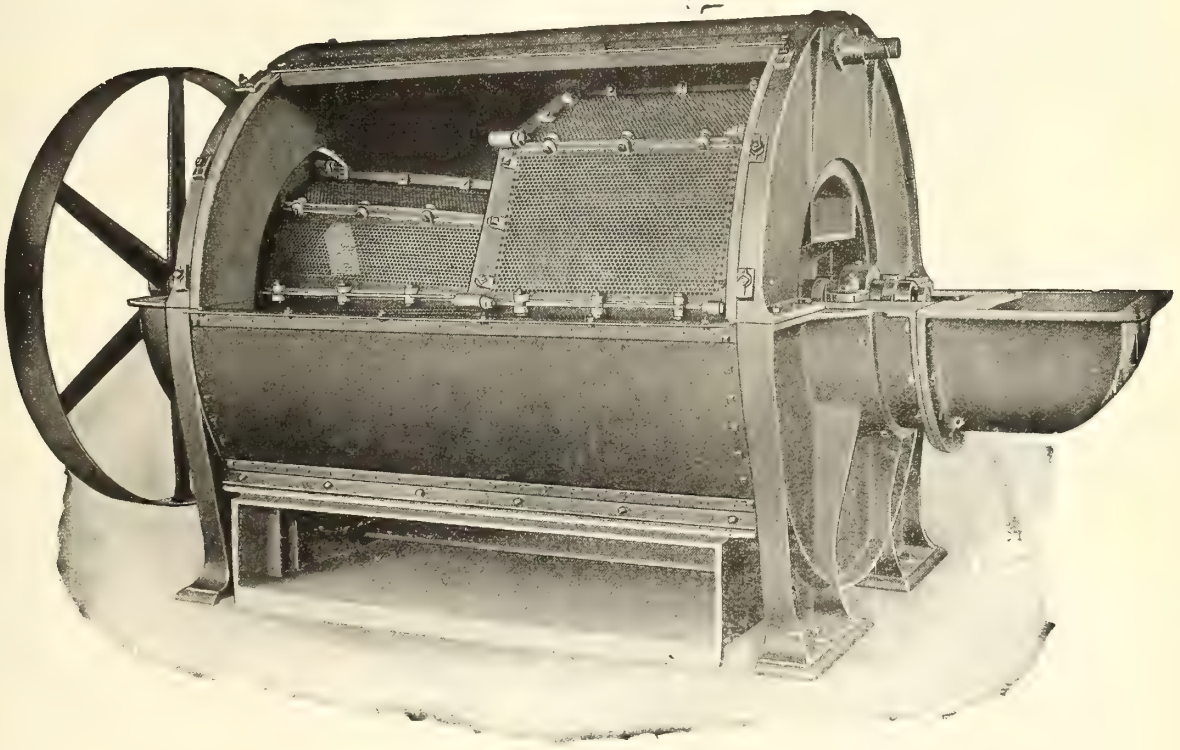
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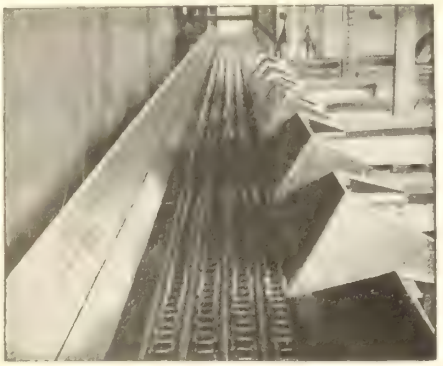
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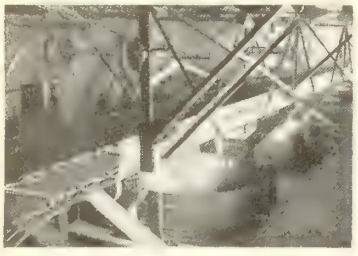
"Hercules" Chain Conveyors handling Pulp wood



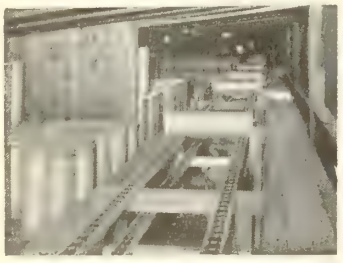
Wood Apron Conveyor handling Bales of Rags



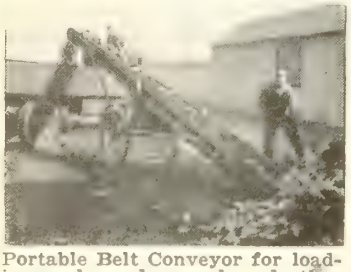
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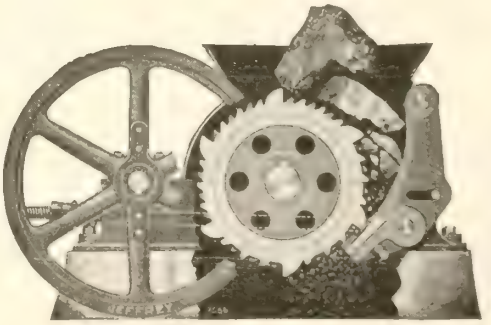
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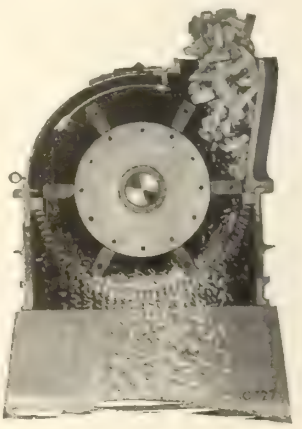
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Type "E" Swing Hammer Shredder for reducing Pulp Wood Chips

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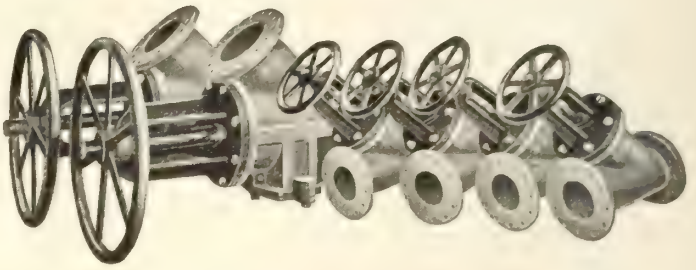
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A special Felt has been designed for use in conjunction with this Felt Washer wherever it is in operation.

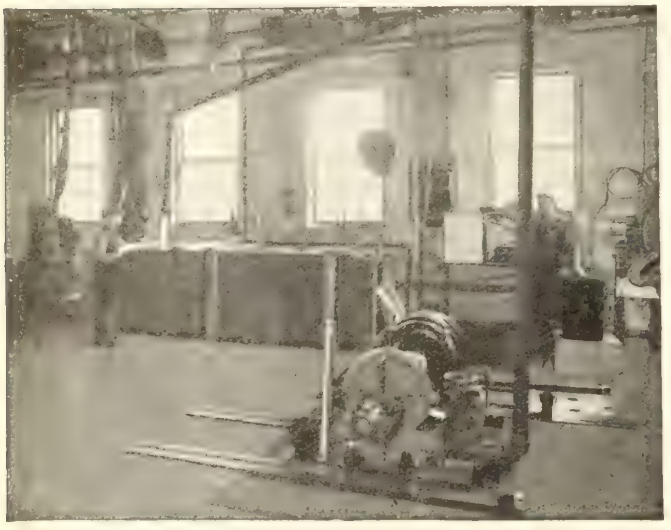
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Wet End of 232 in. Fourdrinier Machine at Abitibi Power & Paper Co., Iroquois Falls, Ont.,
Which has given an output as large as 90 tons in 24 hours.

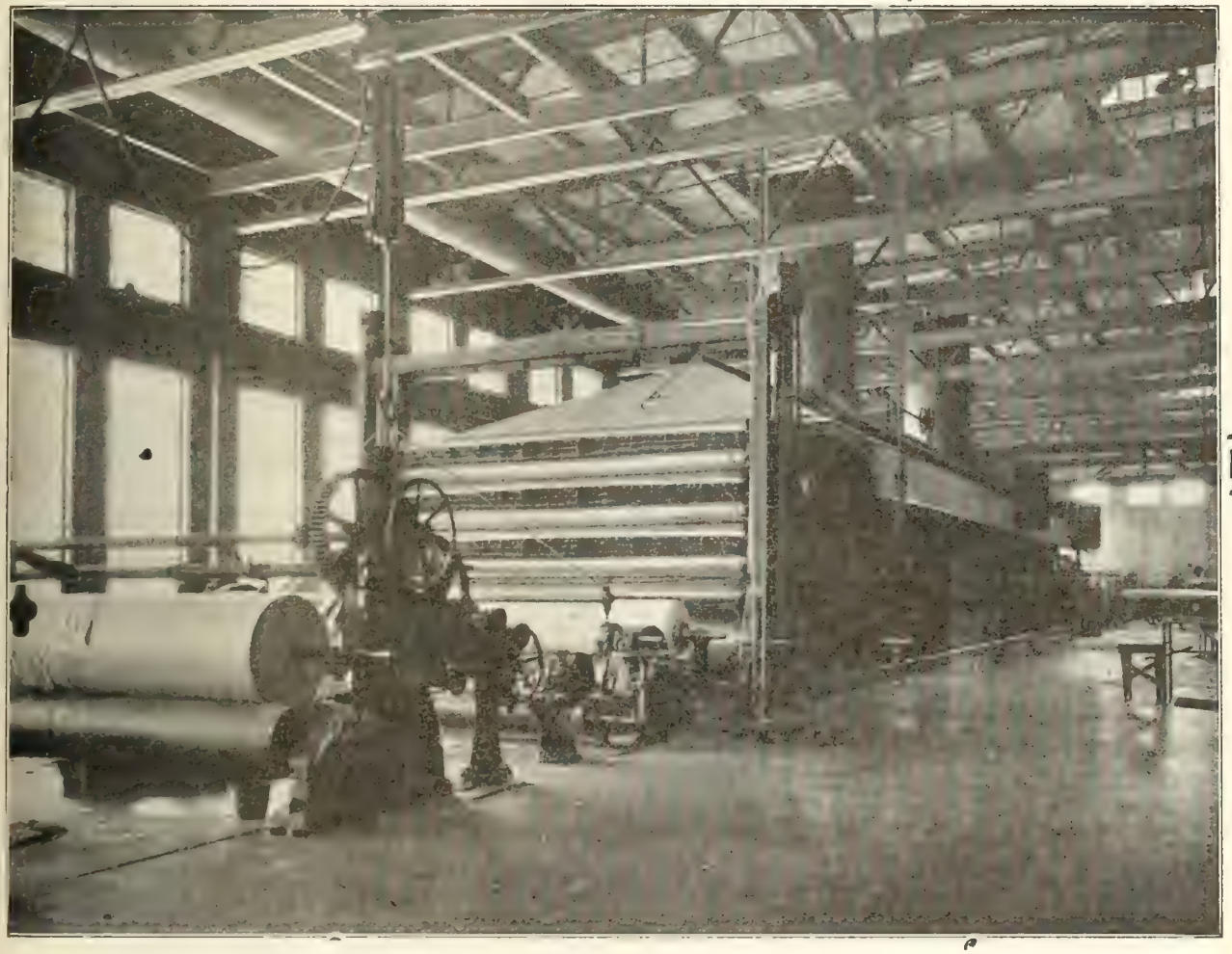
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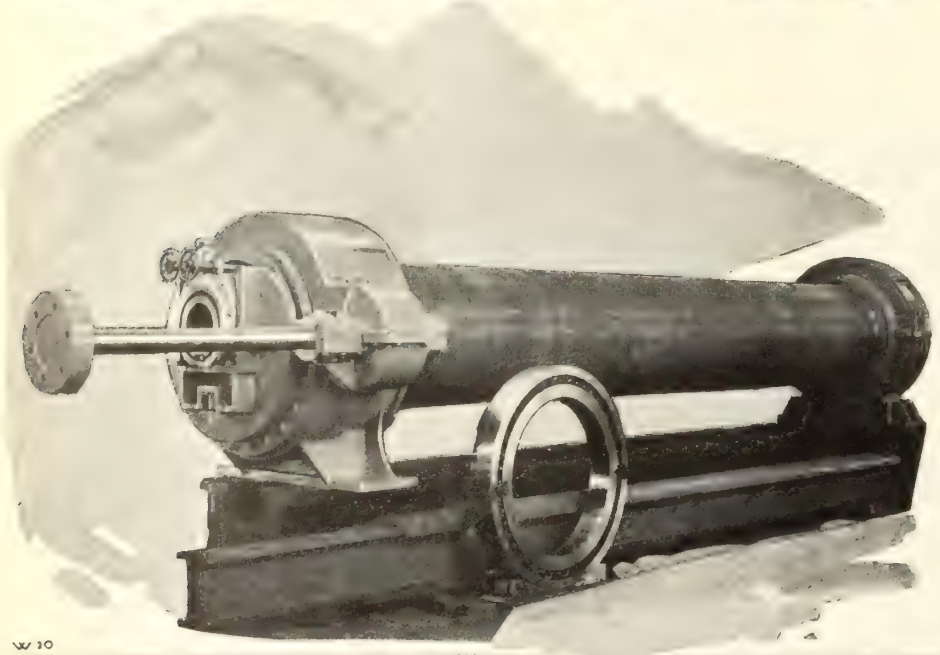
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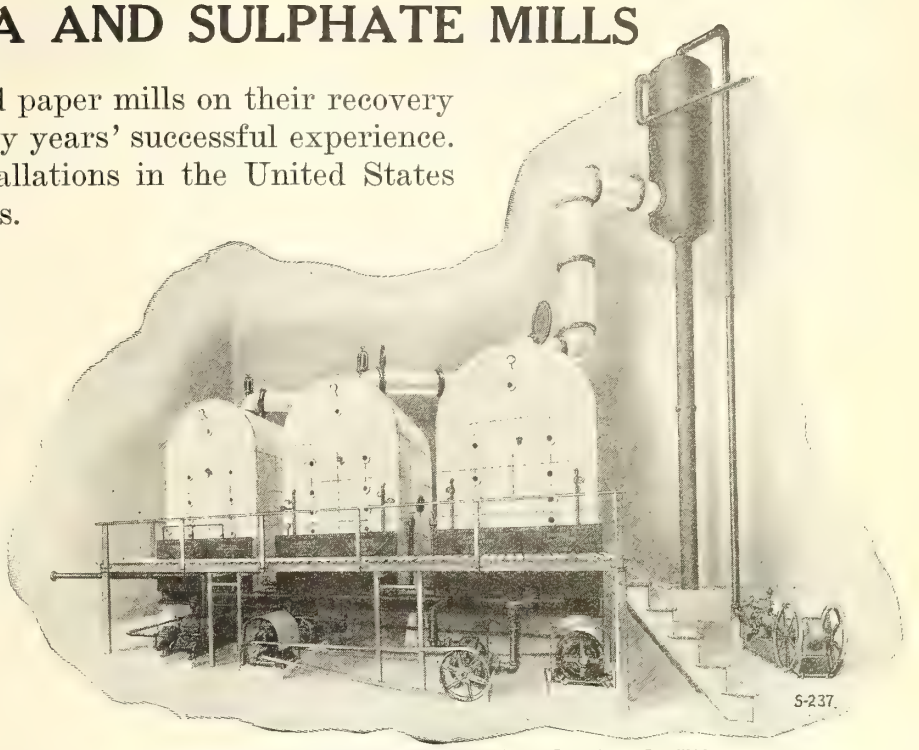
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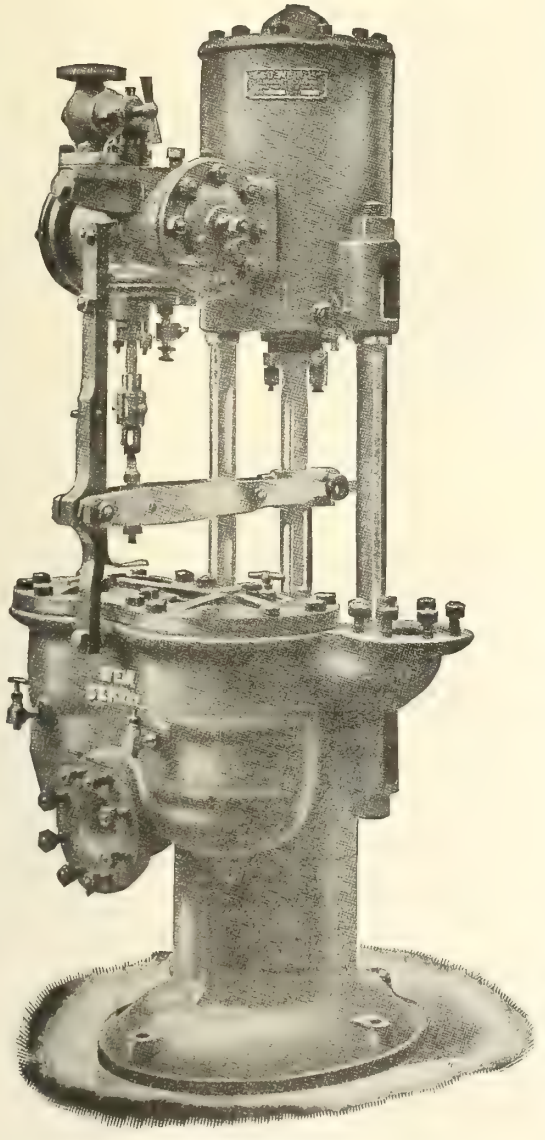
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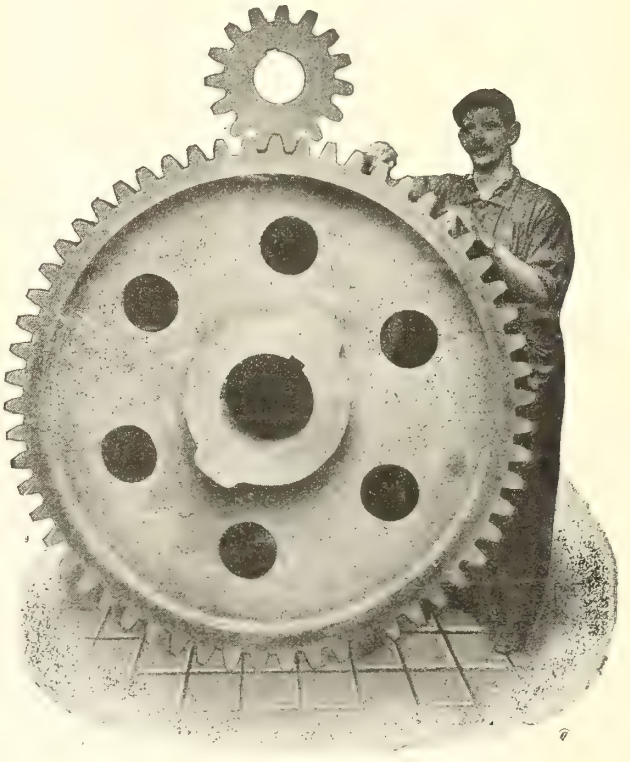
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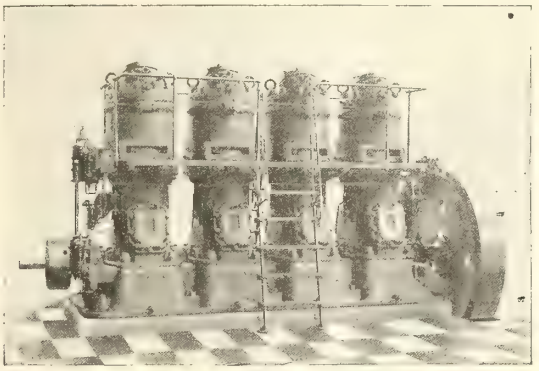
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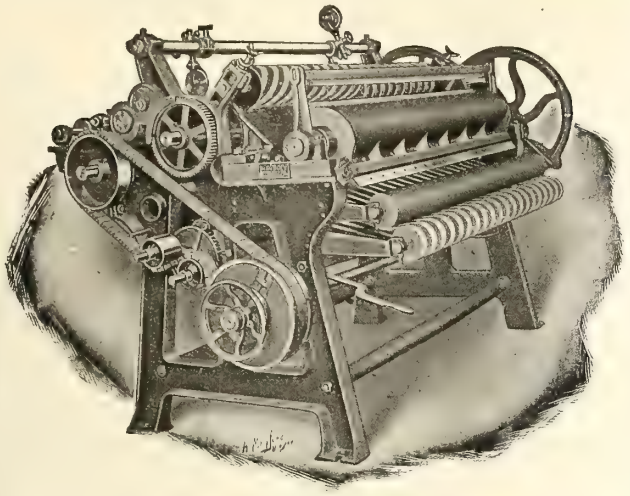
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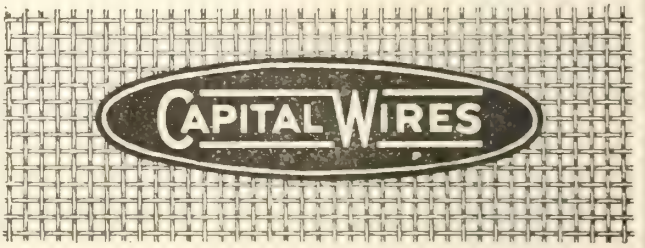
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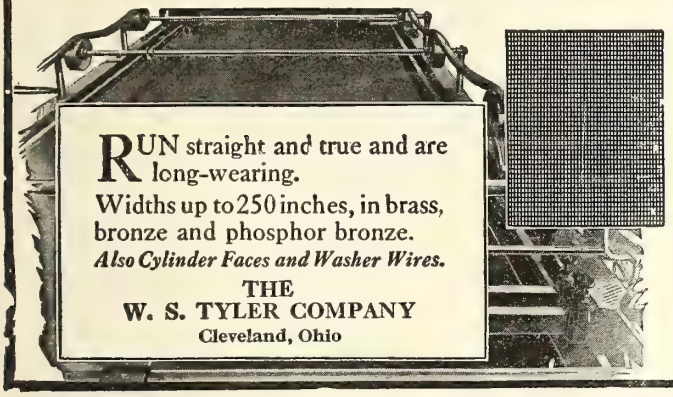
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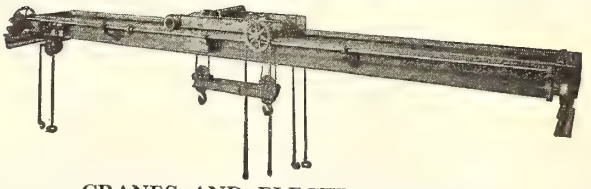
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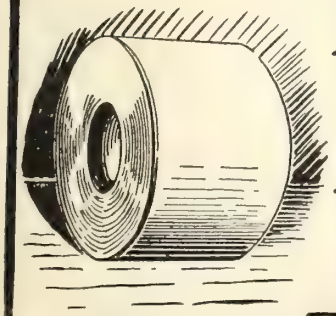
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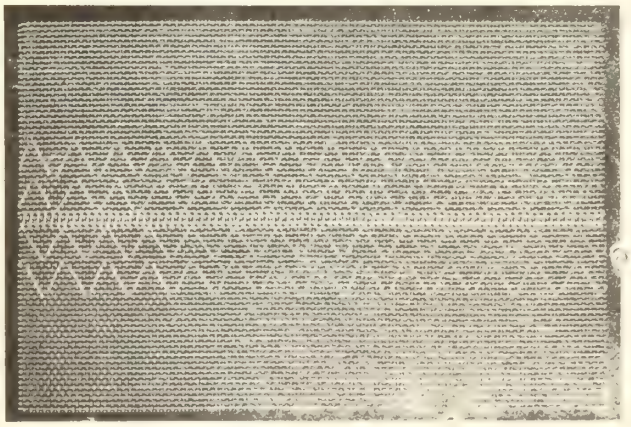
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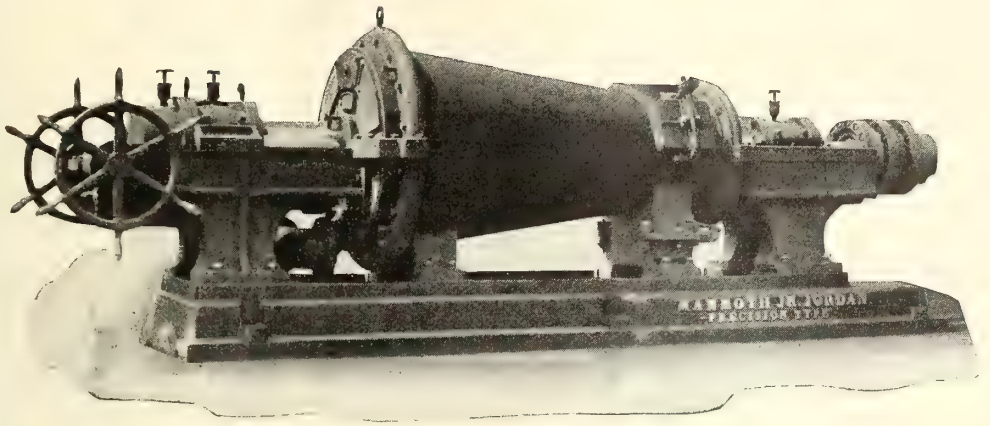
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TABLE OF CONTENTS

Editorial:

The Forestry Conference 811
Straw pulp 811
The British Empire Exhibition 812

Special Articles:

The pulp and paper industry and its raw material 813
Steam accumulators 817
American pulpwoods 819

News of the Industry:

Japan's paper production in June 815
Power price settled by Great Lakes Paper Co. 815
Enormous production of newsprint 816
Ottawa session of Conference closes 822
Is the paper industry practising forestry? 822
Competition of paper mills in Japan 823
British trade news 826
Pulp and paper news 827
New Brunswick news 828
Japan's pulp and paper imports 828
United States notes 829

Miscellaneous Information:

"The Business of Selling" 815
Technical Association papers, Series VI .. 816
Does hard work kill anyone? 818
Review of recent literature 824

The Markets:

One cord prints 96,000 pages 828
Canadian trade conditions 831
New York markets 832

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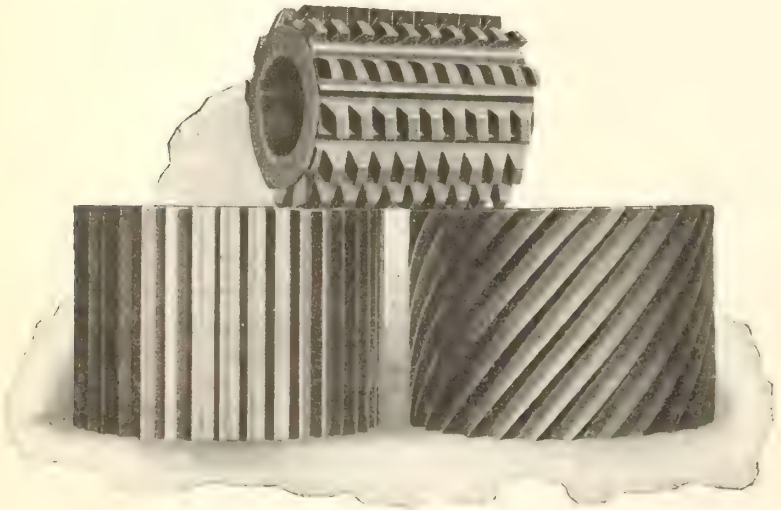
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:-: EDITORIAL :-:

THE FORESTRY CONFERENCE

We had the privilege of attending some of the sessions of the Imperial Forestry Conference which held business meetings at Ottawa last week. The discussions were most earnest, and excellent papers and reports were presented by the delegates from the different parts of the Empire. One could not listen to these statements without feeling the largeness of the Empire and at the same time, the interdependence of the different parts. One of the connecting links running through the whole structure seemed, without question, to be the supply of timber for various purposes, and one of the satisfactory conclusions to be drawn from discussions and remarks was that the Empire contained all kinds of timber. These kinds are so varied in the different parts of this commonwealth of nations that timber can and should form a basis for very considerable volume of trade among the Dominions and with the home country.

The Conference has, no doubt, brought home to many of the wood users of Canada, a distinctly new conception of what the other parts of the Empire have to offer to wood using industries. Just one instance of this is the green heart tree which grows in British Guiana, and which has the peculiar and valuable property of resisting attacks of marine borers. This is of peculiar interest to concerns in British Columbia, especially to paper mills which in some instances are actually built on piles. A representative from British Guiana had twenty or more samples of different kinds of wood suitable for various purposes, and representatives from other parts of the Empire made reference to products of the forests of their countries which could be sent to Canada in exchange for our softwood. One interesting example of the value of these Empire conferences was the remark made by Sir James Calder that he had seen burned up in destructors in New Brunswick, slabs which could have been sawed into thin lumber used for making banana boxes or crates, such as are now supplied to the value of many thousands of dollars by Scandinavian countries to the West Indies.

Canada should get two great lessons from this conference, first, to trade as far as possible with other Dominions and the home country, and second, to preserve our almost priceless softwood for the Empire's requirements.

STRAW PULP

Our London letter this week makes reference to the visit of Sir Frederick Becker of Canada this summer in connection with a broad plan of this great forward looking exponent of pulp and paper manufacture. It is very interesting and hopeful that Sir Frederick is taking a deep interest in the subject of pulp from straw. Canada can well welcome him and give him every assistance in carrying out experiments and investigations in connection with this material.

Some time ago, in an article which was published in the Pulp and Paper Magazine, Mr. Martin L. Griffin, who has had a long and wide experience in manufacturing paper of various grades, made a strong plea for the utilization of straw for the manufacture of high grade papers, and predicted that before long it would become not only economically necessary, but financially desirable, to begin on this continent measures for the production of high grade straw pulp. It is recognized that the straw fiber is not the equivalent of wood fiber in all respects, but it has been shown that the straw fiber is to be looked upon as a satisfactory supplementary material for paper making. In some products, of course, such as binders board and corrugated board, the straw is used without chemical treatment other than that required for softening it. For other products, such as light weight printing papers, where straw properly prepared is practically a substitute for esparto, it is necessary to cook more carefully and to bleach the pulp to a good white color. This has been done elsewhere, and there is no reason why it cannot be done in Canada.

The Dominion certainly has plenty of raw material for the manufacture of straw pulp. A conservative estimate of the yield of wheat alone in Canada this year places the output at approximately 300,000,000 bushels, and some have given even a higher figure. There are other grains which are also raised in large quantities. In figuring conservatively at a ton of straw per ton of grain, we should have a minimum of 9,000,000 tons of wheat straw, besides a considerable amount of other straws. The great centre of the wheat crop is in Saskatchewan, and in this province, we also find natural deposits of sodium sulphate, as well as a large amount of lignite for fuel, and it is but a short haul from the great coal fields of Alberta. The conversion of this enormous amount of material now results in the formation of much smoke and a little ashes. If but one percent of the total were converted

into paper pulp, we should have on the air dry basis, approximately 40,000 tons a year. This would be a big factor in the pulp market, but if ten percent were converted into paper pulp, we should have about the equivalent of the amount of chemical pulp which Canada now exports. Straw pulp would of course, not be an exact equivalent of sulphite pulp for paper making, as the two have distinctly different qualities, but it would doubtless be possible to make some changes in the production of paper so as to utilize pulp from straw to a considerable extent and in consequence relieve largely the demand on the forests. This would be doubly a conservation measure by saving that much utilization of wood so as to permit new growth to mature, and at the same time, it would be converting what is now lamentably a waste product into something of commercial value.

We trust that Sir Frederick will establish a plant in Canada that will demonstrate the economy of the proposition. Personally, we feel that there is every chance for success. We are quite astonished at the suggestion, however, that there are enormous areas in Australia which might be used for raising straw. It seems ridiculous to consider planting additional areas to grain, when, at the present time, there is such an enormous amount of straw being wasted in Canada, and probably similar or proportional amounts in other grain growing countries, and at the same time there is hardly sufficient market for the grain that is now being grown to maintain prices at a level which will give the farmer a day's wages for a day's work, or even a boy's wages for a man's work.

THE BRITISH EMPIRE EXHIBITION

The British Empire Exhibition, which will be held in Wembley Park, London, England, from April to October inclusive, 1924, will provide the greatest opportunity in history for the display of Canadian products, particularly manufactured goods.

The British Empire occupies one-quarter of the earth's surface and includes portions of every continent. The countries of the British Empire contain one-quarter of the entire population of the world. A great part of the world's shipping and foreign trade is under British control.

London is still the financial and commercial centre of the world. All roads by land and sea lead to London.

Practically every country of the British Empire will display its products at this Exhibition. Millions of people from the British Isles, from other countries and from Europe will attend it.

The Canadian Government has voted one million dollars to help finance Canada's section of the Exhibition. Space, made available for manufacturers at merely nominal cost, is necessarily limited and applications will be accepted in the order in which they are received.

The Editor has been appointed to represent the Pulp and Paper Industry in preparing an exhibit.

COBWEBS

We notice that the government of New Brunswick has decided not to proceed with the installation of a power plant and transmission line down the St. John River Valley. The reason for this is given as a lack of a definite undertaking for consumption of the amount of current necessary to make the proposition financially sound. It will be remembered that the International Paper Company had a lease of power rights at Grand Falls, and that the lease was not renewed because the Company had not proceeded with construction of a power plant at that point. The reason for the private company not going ahead was precisely and exactly the same reason which now constrains the Government to refrain from taking the same step.

There are many Canadian paper makers who will learn with deep regret of the recent death of Mr. James Nuttall, who has been for many years the head of the well known paper machine manufacturing firm of Bentley & Jackson in England. This concern has made many of the paper machines now running in Canada and was, we believe, the first concern to send a paper making machine to this country. At any rate one of the oldest machines it that which was placed in the mill at Hartville, Nova Scotia. This machine was installed in 1876. The mill containing the largest number of Bentley & Jackson machines is the Wayagamack mill at Three Rivers, Quebec, where there is a regular battery of these machines turning out high grade kraft paper.

We recently heard Principal Ritchie of the Congregational College in Montreal make a statement which is worthy of our thoughtful consideration. He said, "Life was intended to be a dignified walk with God, but we have made it a scramble for what we can get."

It is understood that a company recently organized for establishing a newsprint mill in Canada, has decided to proceed only with the erection of a groundwood mill. That seems to us, in view of the large production of newsprint soon to come on the market, as a very wise move. A number of the paper mills that have recently extended their newsprint production have, by doing so, made their own market for a considerable amount of pulp which previously had been sold to other customers; that is, to their own competitors. This previous excess of groundwood pulp has been taken off the market much more rapidly than new groundwood production has been provided for. It would seem that there would not be any difficulty in disposing of a fair amount of new groundwood production.

The Canadian Pulp and Paper Industry and Its Raw Material*

The pulp and paper industry of Canada, which rests upon the utilization of the country's pulpwood resources, ranks second in point of capital investment among the industries of the Dominion. Its capital amounts to close upon four hundred million dollars. It ranks next to agriculture and the live stock industry in its contribution to the external trade of Canada. The value of its annual exports amounts to more than one hundred millions. It comprises over 100 establishments, scattered throughout the country, principally in Quebec, Ontario and British Columbia. It gives regular employment to some 25,000 operatives, exclusive of woodsmen, who, at certain seasons, number as many more. It pays out in salaries and wages some $35,000,000 annually and produces commodities valued at over $150,000,000. Its greatest growth has taken place within a comparatively few years and has been due in part to the waning supply of pulpwood in the United States, which has made it necessary for that country to look to the Dominion for a considerable part of its requirements of pulp and paper. Water-power development has had much to do with the growth of the industry and other favorable factors have played their part. Its future, it is becoming more and more evident, rests upon the degree of scientific management which can be applied to the forests and this, in turn, depends upon the measure of support accorded by the governments responsible for the protection and conservation of the country's resources.

Since 1908, which is as far back as reliable records are available, the consumption of pulpwood in Canada has shown a remarkable increase. In 1908 the Canadian mills used 482,777 cords of wood in the manufacture of pulp and paper; in 1920, the consumption of pulpwood amounted to 2,777,422 cords, or almost six times as much. While the dollar value of the wood has not advanced at the same ratio, there has been a considerable increase as is shown by the fact that the average value per cord in 1908 was $6.07 while in 1921 it was $17.55, an increase of approximately 190 per cent.

The year 1920 witnessed the greatest consumption of pulpwood by Canadian mills, amounting, as before stated, to 2,777,422 cords. Consumption in 1921 declined somewhat, owing to the general business depression, but when the figures for 1922 become available it will be found that consumption was greater than in 1920, and will probably exceed 3,000,000. In the last fifteen years the Canadian mills have consumed approximately 25,000,000 cords of wood. The larger part of this wood was spruce, although of late years the percentage of spruce has not been so high as it was at the beginning of this period. In 1908 spruce formed 87 per cent of the total wood consumed, and balsam 12 per cent; in 1921, the last year for which figures are available, spruce accounted for 69 per cent of the total and balsam 25 per cent, hemlock ranking third with about 5 per cent.

In addition to what was consumed locally a considerable quantity of wood was exported during this period. In 1908, 895,409 cords, having an average value of $5.47 per cord, were exported; in 1922, 1,011,332 cords, with an average value of $10.24 per cord. Total exports of pulpwood during the past fifteen years amounted to 15,377,000 cords or a yearly average of 1,025,000 cords. Combining domestic consumption with exports we have a total for this period of over 40 million cords, of which our own mills have consumed 62 per cent and our exports 38 per cent.

It is of interest to note that whereas in 1908 we exported 65 per cent of our cut of pulpwood and consumed only 35 per cent, this ratio gradually changed until in 1921 we exported 33 per cent and consumed 67 per cent. Since in 1922 our exports were smaller and our production of pulp and paper greater than in 1921 the proportion consumed at home as compared with the volume exported will be found to have increased.

Since 1902 Canadian exports of pulpwood have all gone to the United States. We supply about 20 per cent of the total pulpwood used in that country. This, however, does not represent our entire contribution to their pulp and paper requirements since that country also takes about 90 per cent of our pulp and paper exports. These have also increased very considerably in recent years.

Canada's increasing consumption of pulpwood is, of course, reflected in the large increase in the manufacture of pulp and paper which has taken place in the last fifteen years. The annual report of the Forestry Branch showed 40 mills producing pulp in Canada in 1908; in 1921 the report shows 67 mills engaged in the manufacture of pulp. In the earlier year the total quantity of pulp produced was 306,738 tons valued at $2,931,653, in 1920 the total production amounted to 1,960,102 tons valued at $141,553,000. This, however, was a year of abnormal market prices and is not to be taken as a criterion.

In volume of production mechanical pulp with about 1,500,000 tons per annum leads. Production of this grade of pulp increased from 325,609 tons in 1908 to 1,090,114 tons in 1920. Of the total production in 1920, 703,000 tons were made for use in domestic mills and 304,000 tons were exported. Since 1908 Canada has exported 3,929,000 tons of mechanical pulp, of which 2,764,000 tons have gone to the United States and 935,000 tons to the United Kingdom. Of the total production of 1,090,014 tons in 1920, 558,000 tons or over one-half were produced in the Province of Quebec, and 394,000 tons in Ontario.

The total production of chemical pulp in 1909 was 120,000 tons of which 115,000 tons was sulphite pulp. In 1920, production of chemical pulp amounted to 848,528 tons, of which 654,273 tons was sulphite and the remainder sulphate, with the exception of 5,800 tons of soda pulp. Previous to 1909 no pulp was produced in British Columbia but in that year the province manufactured 644 tons, all sulphite with the exception of 44 tons of soda pulp. In 1920 British Columbia produced 108,774 tons of mechanical pulp, 92,466 tons of sulphite and 17,242 tons of sulphate; a total of 218,482 tons.

* Paper read by Edward Beck, Secretary of the Canadian Pulp and Paper Association at the British Empire Forestry Conference, Ottawa, August 10, 1923.

The total production of chemical pulp in 1920 was 848,528 tons, of which Quebec produced 400,355 tons; Ontario 256,317 tons and British Columbia 109,708 tons.

It might be well to point out in passing that while the groundwood tonnage is considerably higher than chemical pulp tonnage it is estimated that at least 50 per cent of the wood used was consumed in the chemical pulp mills.

Canadian exports of chemical pulp have risen from 40,687 tons in 1908 to 507,827 tons in 1922. Of the total production we export about 60 per cent, most of which goes to the United States with smaller quantities to England, France and Japan. During 1922 Canadian exports of chemical pulp amounted to 507,827 tons valued at $31,567,044 divided as follows: bleached sulphite, 151,048 tons, valued at $12,112,480; unbleached sulphite 208,445 tons, valued at $10,377,746, and sulphate, 148,335 tons, valued at $9,166,818.

According to the latest census report the Canadian mills in 1921 had an annual capacity of 1,320,344 tons, dry weight, mechanical pulp and of 1,039,866 tons of chemical pulp.

While the figures given above indicate that the largest cut of pulpwood in any one year has not greatly exceeded four million cords, the probabilities are that the current year will witness a cut somewhat in excess of five millions. New mills which have come into operation or are in process of building will materially increase the domestic demand. Exports are also increasing. From January to June inclusive, this year, Canada exported 731,162 cords of pulpwood as compared with 462,196 cords during the corresponding period last year, an increase of 58 per cent over 1922. The indications point to a still greater rate of increase during the remainder of the year. It is safe to assume that the annual drain upon Canada's pulpwood resources from now on will amount to not less than 5,000,000 cords a year as long as that amount of wood is available. This, of course, takes no account of the enormous amount of timber cut for other purposes.

The question which arises as to how much farther Canada can go in the development of the pulp and paper industry with reasonable assurance of being able to find the required raw material for its maintenance and without jeopardizing the enormous amount of capital already invested. This brings up the subject of Canada's pulpwood supply, concerning which there are as many and as varied opinions as there are authorities. Some official statistics have already been placed before the Conference. Unofficial estimates vary. Some of them say there is enough pulpwood in Canada to last all reasonable requirements for centuries; others that, even should there be no increase in the present rate of consumption, there is not enough maturing pulpwood to serve the existing industries for more than a comparatively short period and that if fire and insects are allowed to continue their destructive work the life of the existing supply will be shortened still further.

It is unfortunate that no authentic inventory of Canada's pulpwood supply is available and that most of the estimates cannot be accepted as being reliable or up-to-date. One of Canada's first necessities in dealing with the pulpwood problem would seem to be that of securing trustworthy data as to the supply of standing timber.

In 1919, Mr. F. J. Campbell, then president of the Canadian Pulp & Paper Association, in an address before the Canadian Forestry Association, made some interesting deductions from an official estimate made in 1904 of the then available pulpwood resources of the Province of Quebec, the amount being given as 176,783,966 cords. Consumption in 1904 amounted to but 526,865 cords and it was calculated that the province had sufficient pulpwood at the then rate of cutting to last for 334 years. But, as Mr. Campbell showed, consumption by 1916 had increased to 1,711,151 cords, or 325% of that of 1904, which, taking into account the volume consumed in the intervening 12 years, brought down the expectancy as it should have been from 322 to 95 years. By continuing the calculation and using the same rate of consumption as prevailed in 1916, Mr. Campbell showed that by 1928, or after a lapse of 24 years from the time the original estimate was made, the expectancy of supply would be still further reduced to 45 years. He carries his calculation still further, by saying:

"In the year 1890, the value of the output of the pulp and paper industry in Canada was $3,633,257, in the year 1915, this output had grown to $40,348,021; in 25 years, it has become eleven times greater than it was. The figures I have mentioned regarding our wood supply allow for an increased consumption that in 24 years or in the year 1928, only nine years ahead, will be 5 1-2 times greater than in 1904, but it is evident that at the prevailing rate of development, the consumption will be at least ten times greater than in 1904, or 5 1-2 million cords per annum. At that rate, the remaining supply would be about 121 million cords or, without allowing for further increase, sufficient for only 22 years more."

He added

"We cannot get away from the constantly accelerating rate of consumption and as our supply, whatever it may be, is not at present increasing, the need of conservation and reforestation is daily becoming more urgent."

Mr. George Chahoon, Jr., another former president, in a bulletin issued by the Association in 1920, emphasized the rapidly dwindling supply of pulpwood, its rising cost and the vital necessity of taking adequate steps for its replenishment.

"The pulp and paper companies have foreseen the difficulty which confronts them in the waning supply and the increased cost of logging and transportation, and have given much study to its solution," he said. "This great industry has organized and perfected a system of fire protection and has obtained from the Government the enactment of better laws for the protection of the forests. It has proposed legislation for reforestation and is urging the Government to pass it. It has spent money for experimental work, so that there would be a sound basis of facts on which to lay down rules for forest management and on which to base a wise forest policy. Experimental plantations have been made to determine the best species to plant and the proper soils on which to plant them.

"This whole question of managing the forests for a sustained yield and for the good of the country at large cannot however, be left to private or corporation effort. Since the forests actually belong to the Dominion and Provincial Governments, it is their plain duty to manage them properly. Then, too, the long term investment required, the length of time necessary to raise a crop of trees, the low rate of interest which must be charged against the principal invested, require that such work and management must be undertaken by the only certain long-lived agency capable of such work—the Government. In all the provinces a large part of the general expenses of government are taken out of revenues, and in instance is a reasonable or properly adequate sum being used in the upkeep and perpetuation of the property. Our legislators and administrators are beginning to realize the situation, and much progress has been made in the past five years. There is much need of further progress and in this work both the governments and the public can be assured

of the broad-minded and public-spirited attitude of the pulp and paper industry and can be assured that it will co-operate in every way to develop a forest policy which will place Canada on a firm and solid basis as the greatest pulp and paper producing country in the world."

Dr. C. D. Howe, Dean of the Faculty of Forestry of the University of Toronto, who is a member of the Conference, is also on record as to the probable duration of Canada's pulpwood supply. He says:

"Estimates have been made which extend all the way from 15 to 1,000 years. About 30 years ago a prominent lumberman predicted that the timber supply of Eastern Canada would not last 25 years—and we still have some timber left. Yet his prediction came true. Using the standard of his time he was right. In those days they were cutting trees two feet in diameter. It apparently did not occur to him that the use of smaller trees would become profitable. If we were today dependent upon trees two feet in diameter for our timber or pulpwood supplies we would be facing a famine. Except in protected places, softwood trees of that size are gone from the forest—and they will never return. There are very few areas of commercial timberlands in the St. Lawrence drainage basin and in the Maritime Provinces that have not been cut over at least once—most of them several times and some of them five or six times in the past 60 years, and each time smaller trees and more inferior material were taken. Rising prices of lumber made this possible. The higher the price of lumber, the closer the utilization of the forest. Trees too small to be utilized today may, and, in all probability, will be used 10 or 20 years from now. Estimates as to the continuance of the spruce pulpwood supply are usually based on trees 12 inches or more in diameter, for this is the diameter limit below which spruce trees may not be legally cut in Quebec, where the pulp and paper industry is centered. Personally, I believe that the supply of spruce trees of that class will not last very much longer at the present rate of increase in pulpwood production in Eastern Canada. In fact, the diminishing of the supply has already begun.

"Woods not now extensively used may be pressed into service, such as poplar and birch. Enormous quantities of these species as yet practically untouched are to be found in Eastern Canada. The making of pulp from poplar requires a different process from that of birch and each in turn a different process from that of spruce. So if the hardwoods were used instead of spruce, the pulp mills would have to be reorganized, new machinery installed and new processes established. This would be expensive, but it would be done if necessary—and the consumer of pulp products would pay the cost.

"The other alternative before the pulp companies when the supply of 12-inch spruce gives out, would be to move northward into the Hudson Bay region and utilize the small undersized spruce to be found in the north country where thousands of square miles are covered with spruce from 4 to 8 inches in diameter. It has attained full growth; it will never be any larger and might as well be cut. As you know, the northward migration of pulp and paper mills has already begun. I believe it will continue. I believe the next generation will see the centre of the spruce pulpwood industry on Hudson Bay waters instead of on St. Lawrence waters. The manufacturing costs will be high, the transportation charges will be heavy— and the consumer will foot the bills."

These views are typical of those in Canada best qualified to deal with the subject. They all agree in the premise that so far as Eastern Canada is concerned we are rapidly approaching the time when the industries which owe their existence to our coniferous woods will experience great difficulty in maintaining their supply of raw material. The hopeful thing about the situation is that public opinion is being surely but certainly aroused in behalf of scientific methods of dealing with the remaining forests and that the governments, both federal and provincial, are actively interesting themselves in bringing about an improved condition.

Note: Further statistics on production will be published in the next issue of the Pulp and Paper Magazine.

POWER PRICE SETTLED BY GREAT LAKES PAPER CO.

The agreement between the city of Fort William and the Great Lakes Pulp and Paper Company, represented by L. L. Alstead, of Chicago, was signed Saturday by the mayor and city clerk for Fort William, having already been signed by the company. This will end negotiations which have been going on for many years, involving the controversy over the price of power in the city of Fort William from the Nipigon development of the Hydro Electric Commission of Ontario. The company gets power at $18 per horsepower. The site selected is on the Kaministiquia river, partly in the township of Neebing and partly in the city. Plans are already drafted and work on a plant to cost about three million dollars will commence at once. The city and the township of Neebing provide a portion of the site and give some taxation concessions.

JUNE PAPER PRODUCTION IN JAPAN

The total production in the month of June of the twelve leading paper mills in Japan, members, of the Japan Paper Association, amounted to 63,229,000 lbs. Comparing with the month of May, both production and sales decreased, 1,572,000 and 9,140,000 respectively. Itemized figures follow:—

Printing paper (high grade)	8,534	8,330
Printing (low grade)	10,780	8,866
News	27,000	24,209
Torinoko	4,121	2,855
Hand made paper	1,391	1,563
Match	914	615
Colored	682	554
Chinese	659	260
Miscellaneous	5,701	5,384
Total	63,229	55,054
January—June	368,305	370,893

THE BUSINESS OF SELLING by Harold Whitehead, Head of Department of Business Methods and Sales Relations, Vocational Department, The College of Business Administration of Boston University. 247 pages. Price $1.40.

Whitehead's The Business of Selling provides an all-round course in salesmanship. It shows that success in life depends in great measure on one's ability to understand people; to get their point of view; to forecast their probable reactions to known stimuli; to understand their personal interests; to find a common ground on which to meet and consider problems of mutual concern. Through the use of this text students will realise that everyone has something to sell and consciously or unconsciously practises the art of selling.

Half the troubles of life are imaginary.

ENORMOUS PRODUCTION OF NEWSPRINT

The Canadian Pulp and Paper Association has issued the following report on the production and export of newsprint paper:

The production of newsprint in Canada during the first six months of 1923 has reached a total hitherto unapproached for any similar period. Up to the end of June, Canadian mills manufactured 619,802 tons of newsprint paper, which represents a daily average production of 3,973 tons, or about 470 tons more than the daily average throughout 1922. This tremendous increase is due largely to the addition of new machines to the productive capacity of the mills, but also reflects an increased efficiency of operation and the speeding up of existing machines.

A comparison of the production figures for the first half of this year with those for corresponding periods of previous years shows that production was 20 per cent. greater than in 1922; 66 per cent. greater than in 1920. The production figures for the years from 1920 are as follows:

First 6 months.	Tons
1923	619,802
1922	516,506
1921	373,988
1920	443,512

Other new machines are scheduled to come into operation before the end of the year, and with the recently installed machines getting into full production, it is expected that the production for the second half of this year will surpass that for the first six months by a considerable amount. On this basis, it is probable that the Canadian mills in 1923 will produce well over 1,250,000 tons of newsprint. When it is recalled that the total production in 1913 was only 350,000 tons, the magnitude of the development in this branch of industry during the past ten years will be appreciated.

The consumption of newsprint in Canada is from 120,000 to 130,000 tons annually and approximately 90 per cent. of our production is exported. Of the 619,802 tons produced in the first half of the year, 550,765 tons were exported, 536,137 tons going to the United States and the remainder chiefly to Australia, New Zealand and South Africa. Exports in the corresponding six months of 1922 and 1921 were 457,340 tons and 319,925 tons respectively, so that this year's exports show a gain of 20 per cent. over those for 1922 and of 72 per cent. over those of 1921.

The distribution of these exports is shown in the following table:

	1923. 6 mos.	1922. 6 mos.	1921. 6 mos.
U. S. A.	536,187	421,365	292,615
Australia	5,163	17,942	10,315
N. Zealand	6,095	5,615	5,276
S. America	323	2,365	7,291
S. Africa	2,427	4,123	3,241
All other	570	5,930	1,187
	550,765	457,340	319,925

While our exports to overseas countries have been considerably below the level of the past few years, there is a big increase in the shipments to the United States. Consumption in that country during the last twelve months has broken all records, amounting in 1922 to nearly 2,500,000 tons, of which 1,029,000 tons were imported, 87 per cent. of the imports coming from Canada and the remainder from European countries. This big demand from the United States market is reflected in our exports to that country, which this year have shown an increase of 27 per cent. over those for last year and of 83 per cent. over 1921.

TECHNICAL ASSOCIATION PAPERS, SERIES VI (1923)

The yearbook is illustrative of the broad scope of the studies carried on during the year by the Technical Association, including several important phases of waste in the industry, the wood pulp processes covering mill control and chemical research, several problems in general as well as special pulp and paper manufacturing, the physical testing of pulp and paper, plant management, industrial education and a bibliography of the year's literature on papermaking.

Among the contributors are many prominent executives and engineers of the industry although it is interesting to note the large number of Junior members whose names appear as authors.

The volume opens with the very exhaustive report of the Committee on Waste, covering three subjects: White water losses, Barking drum waste and the Losses due to broke, each of which is separately treated. The report with the discussion on it, contained in the proceedings, will be found worthy of study.

Papers on the manufacturing of pulp and paper are: "Drying and Conditioning of Coated and Other Processed Papers" and "Heat Transference in Machine Room Ventilation" both by J. O. Ross; "Steam Economy in Pulp and Paper Mills," by Edward P. Gleason; and "Anti-Friction Bearings," by George H. Spencer.

Research on chemical pulp processes is dealt with in three papers, one on the soda process and two on sulphite.

Paper drying, one of the subjects of active interest among manufacturers and engineers, is covered by a very complete report containing the results of three tests with the description of the apparatus used in making them, by S. B. Jones and W. F. Goldsmith. Appended to the report is a shortened form of the paper drying code for the use of mills not equipped to make the more detailed analysis but which covers the minimum of items that are considered necessary.

Under paper testing a number of papers deal with different instruments and their results: Mullen bursting strength tester, Elmendorf tearing tester, Schopper folder, Valley size tester, and suggested method for determining the brittleness of paper. One of the most important under this heading is "The Effect of Atmospheric Humidity in the Physical Testing of Paper," by P. L. Houston and H. S. Kirkwood. The investigation was made on 13 different grades of paper from the classes of printing, wrapping and writing papers, under eight different humidity conditions from 15 per cent up to 83 per cent relative humidity. The tests made were moisture content, weight, thickness, expansion, tensile strength, elongation, rupture, folding endurance, tearing resistance and bursting strength, the results of which are given illustrated by curves.

A complete bibliography of papermaking for 1922 by Clarence J. West and A. Papineau-Couture is included as well as a list of the subjects covered by the Committee on Bibliography in the forty contributions it has made since 1917.

The price is $3.00, on receipt of which, the Secretary; Technical Association, Pulp and Paper Industry, 18 East 41st will forward a copy of the book while the supply lasts.

STEAM ACCUMULATORS

By M. EMANAUD

(Translated from "La Technique Moderne", xv, 193- 197 (April 1, 1923) and 237-241 (April 15, 1923), by A. Papineau-Couture)

(Continued from last issue)

Case 2. — When used as a common storage for a battery of boilers an accumulator helps to overcome the difficulties inherent to the operation of several boilers working in parallel. If the rates of combustion under the different boilers are not properly regulated the load may be very unevenly distributed; and should the pressure in one of the boilers fall considerably for some reason or other it may even happen that the other boilers distill into it if the steam connections are not properly made to prevent such an occurrence.

The central steam accumulator, with its relatively constant pressure which is lower (usually but slightly) than that of the boilers, makes them independent of one another and makes the control of the production of the individual boilers much easier.

However, there is no advantage to be gained from an accumulator when the boilers furnish directly superheated steam; but in such a case a common dry steam receiver may be worth considering if the piping is not sufficiently large to take its place.

Cases 3, 4 and **5.** — The use of an accumulator for exhaust steam must be along the lines of the installations at the Bruay mines such as we described above. It allows of making the most of the high efficiency of low pressure turbines for using the exhaust of machines which run intermittently (extracting machines, pile drivers, etc.) for which it is not possible to install a central condensing plant. And further, it may often be worth while increasing the back pressure of the exhaust of these machines and to correspondingly increase the pressure of the live steam, which gives additional power which can be used very efficiently.

The use of an accumulator for this purpose leads to the utilization of steam in stages, as recommended by Kammerer in the Fifth Report of the (French) Committee on the Utilization of Fuel ("Journal Officiel," Dec. 21, 1921). This method consists in using the steam successively for different purposes as it loses its "quality" (pressure or temperature); and it is especially advantageous in "all industries in which the requirements of steam for heat and processes is from one to four times the amount which would be required to furnish the necessary mechanical power by means of a condensing engine." (Examples, breweries, sugar refineries, paper mills, etc.)

But in most cases these requirements do not all occur simultaneously; and the use of an accumulator then greatly facilitates the practical realization of such a conception. Such factors as the location of the accumulators, their working pressure, the method of connecting the various pieces of apparatus and of controlling them, either by hand or automatically, and so on, constitute a problem which in certain cases may be very complex, but which, owing to its very complexity and the large number of variables involved, is often given a very happy solution.

Moreover, there may be diversity, not only in the apparatus and machinery using the steam, but also in the original steam generators. Such is the case, for instance, in steel plants when there may be several boiler rooms, some burning coal and working under approximately constant conditions, the remainder using blast furnace gases and working in a much less regular manner owing to variations in the amount of gas available. Compensation of such variations can be very greatly facilitated by the use of steam accumulators.

Very frequently, in such installations bleeder types of engines can be used as well as engines working under a high back pressure. Turbines are particularly called upon to play a prominent part owing to the possibility of drawing off the whole of the steam after some of the stages, and also owing to the great purity of the condensate which they give which is absolutely free from oil.

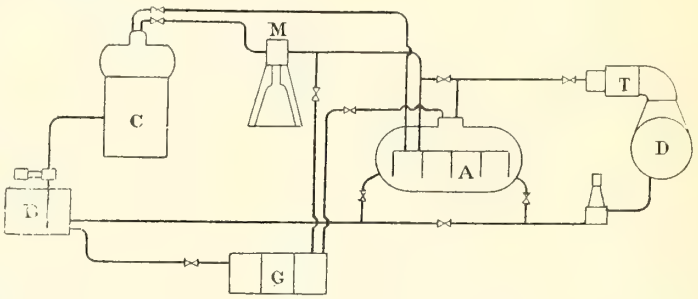


Fig. 11. — Schéma de connexions d'un accumulateur de vapeur.
Diagram of connections of a steam accumulator.

Fig. 11 shows diagrammatically how the connections can be laid out in a simple case: steam from the boiler C is furnished directly at working pressure to the engine M which can, for instance, generate the mechanical power used in the plant. This engine, which works under a back pressure, exhausts either into the accumulator A, or into the low pressure turbine T, or into apparatus G which uses steam or hot water intermittently. The turbine T exhausts into the condenser D, and the hot water from the latter is sent either to the accumulator or to the feed water tank B. Connections are also provided to send live steam directly to the accumulator, to feed the boiler with hot water from the accumulator, and to send either hot water or steam from the accumulator to the apparatus G.

In such an installation as this the accumulator renders services which could not be rendered by a boiler with a large water capacity. It not only compensates for fluctuations in the steam demand, but it also prevents any considerable falling off in the pressure which would occur if steam were furnished directly from the boiler to various apparatus working under widely different pressures. It may even be sometimes worth while installing several accumulators working at different pressures.

Case 6 — By means of the very large types, such as the Ruths accumulator, it now becomes possible to handle successfully the peak loads in electric power stations.

Various methods of handling these peaks have successively been used. Originally, when the boilers were numerous and of small unit capacity and were operated at about 100 per cent. of their rating it was necessary

to start up additional boilers so that they would be under full pressure in time to take care of the peak. Later, when the technique of boilers was directed to the use of a small number of units of very large capacity, the tendency was to handle the peak load by increasing the rate of firing instead of bringing additional units into action. With modern types of boilers steam production can be progressively increased three- or four-fold. In the earlier stages of this development semi-tubular boilers were frequently used, but they allowed of changing the steam production more gradually. But in this case again the use of steam accumulators to supply special turbines for handling the peak load gives the combined advantages of water tube and of fire-tube boilers. The main difficulty lay in the large size required for such accumulators; but now that they are being built to contain several hundred cubic meters of water and to operate at relatively high pressure, their use becomes possible.

They will be in exceptionally favorable operating conditions, for the rate of discharge will be rapid, and the charging can be slow; and we have seen that proper charging requires a certain amount of time. On the other hand, they can be furnished with steam from intermediate stages of the turbines. They will allow of more regular operation of the boiler room, thus making for efficiency and rendering useless the very high rates of combustion which are always the least efficient.

Should the size of the accumulator required be too large, a compromise may be made: the accumulator may be used to compensate for hourly variations in the load, while daily variations, such as the evening peak load, are partly handled by increasing the rate of combustion.

At the Lauchhammer power plant, which we have already mentioned, which supplies a group of metallurgical plants, the original installation of 25,000 kilowatts was increased by addition of a 15,000 kilowatt group and of two Ruths accumulators. The installation consists of two turbo-alternators, one of 12,500 kilowatts using live steam, and the other of 2,500 kilowatts using steam from the two 350 cubic meter accumulators. The high and low pressure stages of the turbine work alternately, the exhaust from the high pressure stage being delivered to the accumulators and the low pressure stage drawing its steam from them. Before this addition twenty-four boilers containing altogether 750 cubic meters of water handled with difficulty the variations in the load, and the efficiency did not exceed 55 per cent. It has been greatly improved by the use of the accumulators, and the consumption of coal per kilowatt has been cut down by 450 grams.

Case 7 — The accumulator may be used more particularly for its thermal effect, that is, the temperature of the steam is of greater importance than its pressure, for instance when it is required for heating, or for chemical processes, or even if it need not necessarily be in the form of steam but can be used equally well as hot water (breweries).

The use of exhaust steam for heating purposes is often possible, and can be accomplished in various ways:

1) Heating by hot water circulation;

2) Heating by means of low pressure steam, the exhaust steam being sent to the heating system instead of being sent to the condenser;

3) Vacuum heating, or heating by means of steam at a pressure lower than atmospheric pressure, the heating system being connected in series or in parallel with the condenser. The amount of water sent to the condenser is regulated according to the requirements of the heating system. This combination is suited rather to reciprocating engines which are less affected than turbines by variations in the vacuum.

4) Hot air heating, in which the steam gives up its latent heat to air which is then sent to the rooms or places to be heated.

If the heat can be used by means of hot water, then the accumulator is an essential part of the installation; but even when the heat is used otherwise regularity in its use is necessary in order to have proper regulation of the combustion. If the supply of steam is not very regular or if there are several sources of supply of steam, or if the time of power production and of heat requirement do not coincide (places heated only in the daytime in plants running twenty-fours a day), it is advisable to place an accumulator between the source of heat (the engines in this case) and the heating system, which makes for better operation and higher efficiency.

At any rate, in certain cases some sort of an accumulator is absolutely necessary to prevent irregular heating when the heating system uses the exhaust from engines working intermittently.

It might be mentioned that at present the use of such accumulators, heated electrically, is being pushed by the electric power companies, which see in it an advantageous method of using offpeak current and improving the load factor of their circuits.

(To be continued)

DOES HARD WORK KILL?

We hear it said when some men die that they worked themselves to death. Dr. James J. Walsh in his splendid book, "Health through Will Power," which you can buy at any bookstore, says according to the Lombard News Letter:

We often hear of hard work killing people, but, as a physician, I have carefully looked into a number of these cases and have never found one which satisfied me as representing exhaustion due to hard work.

"Insidious kidney disease, rheumatic heart disease, the infections, of which pneumonia is a typical example, all these have been the causes of deaths, and not hard work, and they may come to any of us.

"There are just as many accidents as any other of the mischances of life, for it is as dangerous to be run into by a microbe as by a trolley car. Using the will in life to do all the work possible only gives life and gives it more abundantly, and people may rust out, that is, be hurt by rest, much sooner than they will wear out."

Certainly this is good news to business men who are driving themselves night and day. Of course, it must be understood that the man who does the same thing over and over again gets into a rut. Wise men rest themselves, not by loafing but by turning from one job to another, which gives them the benefits of variety.

Life without the oil of love is like an empty lamp.

Strength is often expressed in the terms of gentleness.

American Pulpwoods

The Suitability of Various Species of American Woods for Pulp and Paper Production

By SIDNEY D. WELLS

(Continued from last issue.)

LONG LEAF WILLOW — *Salix fluviatilis.* Wt. 23 lbs. Fiber .7 m.m.

Range — Quebec (Lake St. John and Island of Orleans) and southward through western New England to the Potomac River; northwestward to the Arctic Circle (valley of Mackenzie River) and British Columbia and California; southward in the Mississippi River basin to northern Mexico and lower California.

Common Names — Sandbar willow (R.I., Miss., Cal., Kans., Nebr., Minn., S. Dak., Wis., Ont.); Longleaf willow (Ala., Kans., Mich.); Long-leaved willow (Tenn., Minn., Nebr., Colo., Cal., Idaho, Wash.); Narrow-leaved willow (Neb.); Shrub willow (Nebr.); White willow (Mo.); Red willow (Mont.); Osier willow (Mont.); Willow (Vt., N.Y., Ky., Ind., Miss., Tex., Cal., Nev., Utah, Mont.)

Sulphite Pulp.
Yield — 1,100 lbs.
Character — Easily pulped and bleached; Very weak and poor color.
Possible uses — Same as aspen.

Soda Pulp.
Yield — 1,030 lbs.
Character — Easily pulped; Rather difficult to bleach; Soft opaque and short fiber.
Possible uses — Same as aspen.

Mechanical Pulp.
Same as aspen.

RED ALDER — *Alnus Oregona.* Wt. 23 lbs. Fiber 1.2 m.m.

Range — From Sitka (through islands and coast ranges of British Columbia western Washington, and Oregon) to California (coast ranges to Santa Inez Mountains, near Santa Barbara).

Common Names — Alder (Cal., Oreg.); Red Alder (Cal., Oreg.); Western or Red Alder.

Soda Pulp.
Yield — 1,160 lbs.
Character — Soft; a little harder to bleach than aspen.
Possible uses — Same as aspen.

Mechanical Pulp.
Probably the same as aspen.

BALSA — *Ochroma lagopus.* Wt. 7 lbs.[5] Fiber 1.33 m.m.[6]

[5] From comparatively few specimens.
[6] The result of 50 measurements.

Range — Tropical America, Cuba, Jamaica and Porto Rico.

Common Names—Lanero (Cuba); Corkwood; Downtree, Dum and Bombast Mahoe (Jamaica.)

Sulphate Pulp.
Yield — 280 lbs.
Character — Easily pulped and bleached.
Possible uses — Because of extremely low yield per cord, it is probable that this wood has no value as a source of pulp.

THE MAPLES

BOXELDER — *Acer negundo.* Wt. 30 lbs. Fiber ——

Range — Vermont (Lake Champlain and Winoski River), New York (Cayuga Lake), eastern Pennsylvania, and south to Florida (Hernando County); Northwestward to Winnipeg (Dogs Head Lake and along southern branch of the Saskatchewan River), to the eastern base of the Rocky Mountains (In British America), to Montana (Rocky Mountains), Utah (Wasatch Mountains), western Texas, New Mexico, and eastern Arizona.

Common Names — Boxelder (Vt., Mass., R.I., Del., N.Y., N.J., Pa., Va., W. Va., N.C., S.C., Ala., Fla., Miss., La., Tex., Ark., Mo., Ariz., N. Mex., Mont., Ill., Ind., Wis., Ohio, Mich., Iowa, Kans., Nebr., N. Dak., S. Dak., Minn.); Ash-leaved maple (R.I., Mass., N.J., Pa., Del., Va., S.C., La., Tex., Ill., Wis., Iowa, Ont., Kans., Nebr., Mont., N. Dak., Mich., Minn.); Cut-leaved maple (Colo.); Negundo maple (Ill.); Red river maple (N. Dak.); Three-leaved maple (Pa.); Black ash (Tenn.); Stinking ash (S.C.); Sugar ash (Fla.); Water ash (Dakotas).

Sulphite Pulp.
Probably the same as red maple.

Soda Pulp.
Yield — 1,300 lbs.
Character — Easily pulped; Rather difficult to bleach; Soft opaque and short fiber.
Possible uses — Same as aspen.

Mechanical Pulp.
Probably the same as black gum.

RED MAPLE — *Acer rubrum.* Wt. 30 lbs. Fiber .8 m.m.

Range — From New Brunswick, Quebec, and Ontario (latitude 49°) to Florida (Caloosa and Indian rivers); west to Lake of the Woods, eastern Dakota and Nebraska, Indian Territory, and Texas (Trinity River).

Common Names — Red maple (Me., N.H., Vt., Mass., R.I., Conn., N.Y., N.J., Pa., Del., Va., W. Va., N. Ca., S. Ca., Ga., Fla., Ala., Miss., La., Tex., Ky., Mo., Ill., Ind., Ohio, Ont., Iowa, Wis., Nebr.); Swamp maple (Vt., N.H., Mass., Conn., R.I., N.Y., N.J., Pa., Del., N.C., S.C., Fla., Ala., Miss., La., Tex., Mo., Ind., Ont., Minn.); Soft maple (Vt., Mass., N.Y., Va., Miss., Mo., Ill., Ind., Ohio, Ont., Mich., Kans., Nebr., Minn.); Water maple (Miss., La., Tex., Ky., Mo.); White maple (Me., N.H.); Shoe-peg maple (W. Va.); Erable (La.); Ah-weh-hot-kwah — "Red Flower" (Onondaga Indians, N.Y.); Scarlet maple (Tex.).

Sulphite Pulp.
Yield — 1,450 lbs.
Character — Easily pulped and bleached; Very weak and rather poor color.
Possible uses — Same as aspen.

Soda Pulp.
Yield — 1,300 lbs.
Character — Easily pulped and bleached; Soft opaque and short fiber.
Possible uses — Same as aspen.

Mechanical Pulp.
Probably the same as black gum.

SUGAR MAPLE — *Acer saccharum.* Wt. 35 lbs. Fiber

Range — From southern Newfoundland (along the St. Lawrence and Saguenay rivers, Lake St. John, and northern borders of Great Lakes) to Lake of the Woods and Minnesota; south (through the Northern states and on the Allegheny Mountains) to northern Georgia and western Florida; west to eastern Nebraska, eastern Kansas, and eastern Texas.

Common Names — Sugar Maple (Me., N.H., Vt., Mass., R.I., Conn., N.Y., N.J., Pa., Del., Va., W. Va., N.C., S.C., Ala., La., Ky., Mo., Ohio, Ill., Ind., Iowa, Kans., Nebr., Mich., Minn., Wis., Ont.); Hard maple (Vt., R.I., N.Y., N.J., Pa., Va., Ala., Ky., Mo., Kans., Nebr., Ill., Ind., Iowa, Mich., Ohio, Minn., Ont.); Sugar-tree (Me., Vt., R.I., Pa., Va., W.Va., Ala., Miss., La., Ark., Ky., Mo., Ill., Ind., Ohio, Kans.); Rock maple (Me., Vt., N.H., Conn., Mass., R.I., N.Y., Tenn., Ill., Mich., Iowa, Kans., Wis., Minn., Ont.); Black maple (Fla., Ky., N.C.); Maple (S.C.).

Sulphite Pulp.
Yield — 1,540 lbs.
Character — Easily pulped and bleached; Very weak but excellent color.
Possible uses — Same as aspen.

Soda Pulp.
Yield — 1,500 lbs.
Character — More difficult to pulp and bleach than aspen; Soft, opaque, short fiber.
Possible uses — Same as aspen.

Mechanical Pulp.
Probably similar to black gum.

THE BIRCHES, BEECHES, ETC.

PAPER BIRCH — *Betula papyrifera.* Wt. 34 lbs. Fiber 1.2 m.m.

Range — From Labrador to Hudson Bay (Southern Shores), Great Bear Lake, Yukon River and coast of Alaska; southward to New York (Long Island) and northern Pa., central Michigan, and Minnesota, northern Nebraska (Bluffs of Niobrara River), Dakota (Black Hills), northern Montana, and northwestern Washington (near Seattle).

Common Names — Paper Birch (N.H., Vt., Mass., R.I. Conn., N.Y., Wis., Mich., Minn., Ont.); Canoe birch (Me., Vt., N.H., R.I., Mass., N.Y., Pa., Wis., Minn., Mich., Ont.); White birch (Me., N.H., Vt., R.I., N.Y., N.J., Wis., Minn., Mich., Nebr., Ont.); Silver birch (Minn., N.Y.); Large white birch (Vt.); Boleau (Quebec).

Sulphite Pulp.
Yield — 1,500 lbs.
Character — Easily pulped; Difficult to bleach; Poor strength and color.
Possible uses — Few.

Soda Pulp.
Yield — 1,350 lbs.
Character — More difficult to reduce than aspen; Soft, easily bleached and opaque.
Possible uses — Similar to aspen.

Mechanical Pulp.
Yield — 3,000 lbs.
Character — Short fiber and poor strength; Pinkish color.
Possible uses — As a filler with long fibered stocks.

YELLOW BIRCH — *Betula latea.* Wt. 34 lbs. Fiber 1.5 m.m.

Range — From Newfoundland and along the northern shores of St. Lawrence Gulf to Abitibi Lake and Rainy River; southward to northern Minnesota and through the Northern States to eastern Tennessee, North Carolina, and Delaware.

Common Names — Yellow birch (Me., N.H., Vt., Mass., Conn., R.I., N.Y., N.J., Pa., N.C., S.C., Ill., Mich., Wis., Minn., N. Dak., Ont.); Gray birch (Vt., R.I., Pa., Mich., Minn.); Swamp birch (Minn.); Silver birch (N.H.); Merisier (Quebec); Merisier Rouge (Quebec.)

Sulphite Pulp.
Yield — 1,590 lbs.
Character — Easily pulped; Easily bleached; very weak; Good color.
Possible uses — Same as aspen.

Soda Pulp.
Yield — 1,360 lbs.
Character — More difficult to reduce than aspen; Soft, easily bleached.
Possible uses — Same as aspen.

Mechanical Pulp.
The same as paper birch.

GEECH — *Fagus atropunicea.* Wt. 36 lbs. Fiber 1.1 m.m.

Range — Nova Scotia to Lake Huron (north shores) and northern Wisconsin; south to western Florida and west to southeastern Missouri and Texas (Trinity River).

Common Names — Beech (Me., N.H., Vt., Mass., R.I., Conn., N.Y., N.J., Pa., Del., Va., W.Va., N.C., S.C., Ga., Ala., Fla., Miss., La., Tex., Ark., Ky., Mo., Ohio, Ill., Ind., Mich., Nebr., Minn., Ont.); Red beech, (Me., Vt., Ky., Ohio); White beech (Me., Ohio, Mich.); Ridge Beach, (Ark.).

Soda Pulp.
Yield — 1,530 lbs.
Character — Slightly more difficult to reduce than aspen; soft, easily bleached.
Possible uses — Same as aspen.

BLACK GUM — *Nyssa sylvatica.* Wt. 30 lbs. Fiber 1.7 m.m.

Range — From Maine (Kennebec River) to Florida (Kissimmee River and Tampa Bay) and west to southern Ontario, southern Michigan (up to Gratiot County), southeastern Missouri, and Texas (Brazos River.)

Common Names — Black gum (N.J., Pa., Del., Va., W.Va., N.C., S.C., Ga., Ala., Fla., Miss., La., Tex., Ill., Ind.); Sour gum (Vt., Mass., R.I., N.Y., N.J., Pa., Del., Va., W.Va., S.C., Fla., Tex., Ohio, Ind., Ill.) Tupelo (Mass., R.I., N.J., Del., S.C., Ala., Fla., Miss., Tex., Ill., Ohio); Pepperidge (Vt., Mass., R.I., N.Y., N.J., S.C., Tenn., Mich., Ohio, Ont.); Wild Pear tree (Tenn.); Yellow Gumtree (Tenn.); Gum (Md.); Stinkwood (W.Va.); Tupelo gum (Fla.)

Soda Pulp.

Yield — 1,300 lbs.

Character — Soft. A little harder to cook and bleach than aspen.

Possible uses — Similar to aspen.

Mechanical Pulp.

Yield — 2,610 lbs.

Character — Very short but tough fiber; Very white color.

Possible uses — As a filler with longer fibered stock.

COTTON GUM — *Nyssa aquatica.* Wt. 29 lbs. Fiber 1.6 m.m.

Range — Coast region from southern Virginia to northern Florida, and through the Gulf States to Texas (Nueces River); northward through Arkansas, west Tennessee and Kentucky, southern and southeastern Missouri to southern Illinois (lower Wabash River).

Common Names — Large tupelo (Ala., La., Tex.); Tupelo gum (Ga., Ala., Miss., La.); Sour gum (Ark., Mo.); Swamp tupelo (S.C., La.); Cotton gum (N.C., S.C., Fla.); Tupelo (N.C., S.C.); Wild olive tree (La.); Olivier à grandes feuilles (La); Oliver tree (Miss.); Bay poplar (Ala.)

Sulphite Pulp.

Yield — 1,160 lbs.

Character — Easily pulped; Easily bleached; Poor strength; Fair color.

Possible uses — Same as aspen.

Soda Pulp.

Yield — 1,200 lbs.

Character — Soft, but harder to bleach than aspen.

Possible uses — Similar to aspen.

RED GUM — *Liquidambar styraciflua.* Wt. 27 lbs. Fiber 1.6 m.m.

Range — From Connecticut (Fairfield County) to southeastern Missouri and Arkansas; south to Florida (Cape Canaveral and Tampa Bay) and Texas (Trinity River.)

Common Names — Sweet gum (Mass., R., I., N.Y., N.J., Pa., Del., Va., W.Va., N.C., S.C., Ga., Ala., Fla., Miss., La., Tex., Ark., Ky., Mo., Ill., Ind., Ohio); Liquidambar (R.I., N.Y., Del., N.J., Pa., La., Tex., Ohio, Ill.; Red gum (Va., Ala., Miss., Tex., La.); Gum (Va.); Gumtree (S.C., La.); Alligator-wood (N.J.); Gilsted (N.J.); Starleaved gum; Satin walnut (lumber markets.)

Sulphite Pulp.

Yield — 1,190 lbs.

Character — Easily pulped; Difficult to bleach; Very poor strength; Dark colored.

Possible uses — Few.

Soda Pulp.

Yield — 1,080 lbs.

Character — A little more difficult to reduce than aspen; Soft and hard to bleach.

Possible uses — Same as aspen.

CUCUMBER-TREE — *Magnolia acuminata.* Wt. 27 lbs. Fiber 1.3 m.m.

Range — From Western New York through southern Ontario to southern Illinois and south in the Appalachian Mountains to southern Alabama (Stockton) and northeastern Mississippi (Meridian), central Kentucky, and Tennessee (near Nashville and eastern part of State); northeastern, southern and southwestern Arkansas.

Common Names — Cucumber-tree (R.I., Mass., N.Y., Pa., D.C., (cult.); N.C., S.C., Ala., Miss., La., Ark., Ky., W.Va., Ohio, Ind., Ill.); Mountain Magnolia (Miss., Ky.); Cucumber, (W.Va.); Black lin (W. Va.); Magnolia (Ark.); Pointed-leaved magnolia (lit.).

Sulphite Pulp.

Yield — 1,250 lbs.

Character — Easily pulped; Somewhat weak; Difficult to bleach; Dark colored.

Possible uses — Few.

Soda Pulp.

Yield — 1,200 lbs.

Character — A little harder to reduce and bleach than aspen.

Possible uses — Same as aspen.

Mechanical Pulp.

Probably similar to black gum.

SWEET MAGNOLIA — *Magnolia glauca.* Wt. 39 lbs. Fiber 1.3 m.m.

Range — Massachusetts (Gloucester, Essex County); Long Island (Turtle Pond, Suffolk County); from New Jersey to Florida (Biscayne Bay on the east coast, and to Tampa Bay on the west coast); west in the Gulf region to Texas (Trinity River.)

Common Names — Sweet Bay (Mass., R.I., Pa., N.J., N.C., S.C., Ala., Fla., Miss., La., Ark., Mo.); White Bay (N.C., S.C., Ala., Fla., Miss., La.); Swamp laurel (Mass., N.C., Ga., Miss.); Swamp sassafras (Del., Pa., Tenn.); Swamp magnolia (N.J., Pa., Tenn.); Magnolia (N.J., Del., Pa.); White laurel (Del., Miss., La.); Beaver-tree (Del., S.C., Miss.); Bay (S.C.).

Sulphite Pulp.

Yield — 1,680 lbs.

Character — Easily pulped and bleached; Fair strength; Poor color.

Possible uses — Can be used without pulps from conifers in manufacturing of book, magazine, and similar papers.

Soda Pulp.

Yield — 1,680 lbs.

Character — Easily pulped; Rather difficult to bleach; Soft opaque fiber.

Possible uses — Same as aspen.

Mechanical Pulp.

Probably similar to black gum.

(To be Concluded)

H. B. Wadsworth, exporter and importer of pulp and paper, has left New York for a business tour of Japan and the Orient from which he does not expect to return until late in the Fall.

The greatest of all faults is to be conscious of none.—Carlyle.

Woodlands Section

OTTAWA SESSION OF CONFERENCE CLOSES

Colonel Henry Solon Graves, director of the Yale Forest School, delivered the first paper at the Saturday morning session of the British Empire Forestry Conference, consisting of an inventory and review of the forest and particularly the soft wood resources of the United States.

He stated that although three-quarters of the original soft wood forests of the United States had been cut over, it had been estimated that that country still contained more soft wood timber than any other country except Russia.

The States is using her timber three or four times as fast as it is growing, he continued. In addition to the problem of bridging this gap, the country is faced with the fact that only one-fifth of the country's forest lands is publicly owned. The remaining four-fifths has been alienated to private owners.

Colonel Graves pointed out that superficially the country still has enormous resources. Nearly two thousand billion feet might seem inexhaustible to the lay mind, but economically, the fact that most of the stock lay over 2,000 miles from the point of ultimate consumption, meant that the country was in a serious predicament.

C. E. Legat, delegate from South Africa, asked Colonel Graves, whether, in estimating the requirements of the United States and the hope of meeting same, account had been taken of the fundamental fact that population doubles every 50 years. Colonel Graves replied that he was optimistic of one thing only, namely, there was enough absolute forest land in the United States to supply their requirements if handled under proper forestry principles. He pointed out that the coniferous timber was being cut today at a rate amounting to eight and a half times the annual growth.

Colonel Graves estimated that, in all, the country contained 1,830 billion board feet of timber suitable for the manufacture of lumber, and 940 million cords of pulpwood. Of this total, douglas fir leads with a total stock of 595 billion board feet, followed in order of quantity by the western yellow pines, the southern pines and the spruces and firs.

Lord Lovat, chairman of the conference, asked Colonel Graves if it were not true in the United States that in a good many of the outlying areas the settlers could not eke out an existence by agriculture alone, but were compelled to supplement their activities by work in the forest.

Colonel Graves, in reply, stated that in the rich Central States, agriculture could sustain the community, but that in other parts of the country, where a large proportion of the land area was non-agricultural, there was certainly dependence on the forest for work. He pointed out that in Northeastern States, where forests had been cut out, agriculture had deteriorated, and abandoned farms had resulted. In the State of Connecticut the total area of which is only three million acres, there was today 900,000 acres less of improved farm lands than was the case 40 years ago, when forest industries were present to create a market. In the northeast generally the decrease was seven million acres from that under cultivation 40 years ago. The re-establishment of forests and consequently of forest industries would, said Colonel Graves, mean the re-establishment of agriculture in that part of the country.

Among others contributing to the debate which arose were Sir James Calder, Professor Troup, Fraser Story and R. L. Robinson, from Great Britain; Mr. Forbes, from Ireland; R. D. Craig and Mr. Leavitt, of Canada and the Chairman Lord Lovat. The chairman stressed the necessity of periodic reviews of the situation with respect of soft wood resources. Such reviews could focus the general trend of the situation and would provide a check on estimates of annual growth, which are always difficult to obtain with any degree of accuracy.

The Ottawa meetings of the conference closed with Saturday's sessions, but further debate will be held on the train and at various points en route to the Pacific coast, where the final session will be held at Victoria, B. C. This afternoon the delegates were given a motor ride around the city, and in the evening were the guests of Prime Minister Mackenzie King and the Hon. W. S. Fielding, minister of finance, at a dinner held at the Country Club.

IS THE PAPER INDUSTRY PRACTISING FORESTRY?

By O. M. PORTER

Secretary-Treasurer, The Woodlands Section of the American Paper and Pulp Association

The Woodlands Section has prepared a report form for use by the managers of the woods department of pulp and paper companies in indicating the actual practice of forestry in their operations. Copies of this will be sent shortly to all members of the Woodlands Section, whose co-operation is requested in this project to develop a report showing the status of the paper industry as regards the protection and development of its basic raw material — pulpwood.

German Pulpwood

Recent pulpwood auctions resulted in the following prices:

	First		Second		Third	
Class	Marns	Dollars	Marks	Dollars	Marks	Dollars
Rough	410,000	5.30	340,000	4.45	280,000	3.60
Peeled	444,000	5.75	375,000	4.85	300,000	3.90

At the present value of the mark, transportation costs in Germany are almost negligible. The following covers pulpwood and logs, with the dollar at 100,000 marks:

Miles	Rate Per Short Ton
100	$0.32
200	0.54
300	0.72

The following statistics from publications by the Austrian Secretary of Commerce indicate that its paper industry is now operating to approximately 80 per cent of its pre-war capacity:

CAR LOAD PRODUCTION
10 Long Tons

Product	1913	1922
Paper	18,843	15,108
Cellulose	17,136	10,187
Ground Pulp	7,514	7,159
Paste Board	7,005	5,155

Koehler Thinning Theory

The Koehler theory of thinning holds that for every sound tree of every species, regardless of age and site conditions, there is a fixed ratio between height and width of crown. This has been worked out for two of the principal European species as follows:

Picea excelsa ..Ratio is 6:1
Fagus sylvatica ..Ratio is 5:1

Thus, a spruce tree 90 feet tall should have a crown 15 feet wide; in other words, covering 15 by 15 square feet of horizontal crown area.

If this theory is correct, it provides an automatic control for thinnings. The number of trees to the acre would be 43,560 divided by W squared, where W is the width of the crown or 1/6 the length of the tree; so that the normal stand per acre, where the total average height of the tree is indicated as H would be 43,500 x 36 divided by H squared.

In application, all that is necessary is the reduction of the number of trees per acre, in accord with this formula which, for spruce, would work out somewhat as follows:

Average Height	No. Per Acre	Removable Through Thinnings
30′	1,740	
40′	980	760
50′	675	205
60′	435	190
70′	320	115
80′	245	75
90′	190	55
100′	156	34

Of course, there are many objections to this theory. It is not applicable to mixed stands; it does not differentiate between predominate and suppressed trees; it does not produce full-length crowns suitable for abundant cone production. It does, however, provide for increased yield, through thinnings, and thus makes possible early returns on a long time, expensive rotation.

About fifty American manufacturers of fine precision instruments of various types all the way from high pressure gauges to ultrafine chemical balances, will show their goods at this year's Chemical Exposition in New York, according to early estimates. More than an equal number of manufacturers of all kinds of chemical and allied plant equipment such as centrifugals, screens, crushing machinery, pumps, acid-proof ware, valves, gears, pipes, drying equipment, filter presses and the like, will show their goods.

COMPETITION OF PAPER MILLS IN JAPAN

The Japan Paper Association embraces twelve leading paper mills such as, Oji, Fuji, Mitsubishi, Kyushu, Chuo, Kokura, Hokuetsu, Karafuto, Umedzu, Kumano, Nakanoshima and Yukosha Paper Mills. There are nine strong paper mills not belonging to the Association that have passed through the business depression, while their comrades passed out of existence. And these are, Chugoku, Nihon, Hokkai Kogyo, Inui, Nishino, Tomoegawa, Takano Yamagata and Toyo paper mills, and producing printing and Japan simile paper. These non-members are competing with the Association members mills by underselling 5 to 10 per cent less from those prices maintained by the members. Since the members mills established an associated pulp sales office, in September 1922 those non-members mills have had to compete in the raw material as well which is the most difficult problem they are now facing, as these non-members have no pulp producing company among them. It is, therefore, seriously considered by them whether to join the Association, or to form a separate guild in order to compete advantageously with the Association mills, as up to now these non-members have had no definite agreement among them, but competing with the Association mills, each safe-guarding its interest which unintentionally are finding and taking an uniform step. The most severe competition is in cigarette paper. The Toyo Paper Mill at Osaka is making this paper regularly supplying to the Government Tobacco Monopoly Bureau almost exclusively. The Oji Paper Mill's Osaka branch, an Association mill, is now contemplating to enlarge its cigarette paper plant there in order to compete with the Toyo Mill, non-member of the Association. Not only in the high grade paper, but a severe competition is raging even in straw board. What would be the outcome of these severe competitions between the Association members and non-members are worth while to be watched.

Extensions of Plants Contemplated by Paper Mills in Japan

Extensions and enlargement of plants contemplated during the war time by the leading paper mills in this country have been suspended by the general business depression which came along after the war, but the revival of the paper market since last year is making possible the completion of such contemplated extensions. Some petty mills have vanished during this depression period, and even larger mills have suffered considerably, but these large mills have had sufficient reserves to avoid such fate as the smaller mills had to face. There are, on the contrary extensions that are under contemplation by some of the large paper mills. Up to the present those that are known, are the one 142″ news machine to be installed by the Kyushu Paper mill at their Yatsushiro branch plant to be completed during the next year, and one 107″ high grade printing machine by the Mistubishi paper mill at their Nakagawa branch plant to be completed by next April or May, this machine to be of a Swedish make.

The two largest paper mills, the Oji Paper Mill and the Fuji Paper Mill, are contemplating enlargement of their plants. The former by raising debentures in the London market, and the latter by increasing their capital. Even though the present market conditions are far from favorable, the extension schemes should be made while the market conditions are quiet, so as to meet the coming boom or favorable market. The demand of paper in this country will not decrease from the present consumption, but within a short time the present output will not be able to take care of probable future business.

Technical Section

REVIEW OF RECENT LITERATURE

PAPER TESTING

A-14 M-12 Mullen Test Comparison. F. A. CURTIS. **Paper Trade J.** 76, No. 19, 48 (May 10, 1923). Results of Mullen tests on 10 samples of paper by 7 laboratories are tabulated, showing the maximum positive and negative deviations and mean deviations from the average.-A.P.-C.

A-14 M-12 Report on Schopper Folding Machines. HELEN U. KIELY. **Paper Trade J.** 76, No. 19, 45-48 (May 10, 1923). — A report is presented of a co-operative investigation into the accuracy of the machine, tolerances allowable and value of the results in valuating paper. (1) The relative humidity at which the paper is run is the source of greatest error. (2) The error due to paper, machine, and method of operation is less in testing paper cut in the cross-machine direction. (3) A machine tests itself within about 10% as a maximum except in an occasional instance, and wider variations must be attributed to the paper or method of operation. (4) Testing at 45% of 55% relative humidity would probably be preferable to the present practice of 65%. (5) A tolerance of approximately 30% in the cross direction must be allowed, so that the value of the folding number in purchasing paper on specifications is questioned. (6) If a folding number is specified, a tolerance above and below should be allowed. The following recommendations are made: (1) A standard instrument should be decided upon for determining relative humidity. (2) Paper should be tested only in the cross-machine direction and no specification for machine-direction fold should be given. (3) Work should be done on collecting data before and after the paper is tub sized. (4) Work should be done on the folding machine after removing one of the plates, thus giving a single instead of a double fold.-A.P.-C.

A-14 Examination of Blotting Paper. G. DALEN. **Mitt, Materialprufungsamt** 5 (1922): **Papierfabr.** 21, 192-196 (Apr. 8, 1923). Blotting paper is tested by passing it between two rolls together with a strip of sized paper containing fresh ink. The two strips, 3 cm. wide and 30 cm. long, come together just as they pass between the rolls, the blotting paper being the upper one. The rolls are each 3.7 cm. in length and 3.4 cm. in diameter and the upper one exerts a pressure of 0.6 kg. on the lower. The paper passes thru the rolls at a speed of 10 cm. per second. Ink is dropped on the lower strip by means of a burette held 2 cm. above its surface. The length of the blot is measured in mm. Comparison of the usual capillary absorption test, used for blotting paper, with the test just described shows little difference, but the former is more uncertain. Thirty-eight tests are tabulated. (Also in **Wochbl. Papierfabr.** 54, 1304-1306 (May 12, 1923).-J.L.P.

A-15 An Improved Method for the Determination of Alpha-, Beta- and Gamma-Cellulose. M. W. BRAY and T. M. ANDREWS. **Ind. Eng. Chem.** 15, 377-378 (Apr. 1923). The authors describe a modified procedure in which the alpha-, beta- and gamma- celluloses are determined volumetrically instead of gravimetrically. One gram of dry Cross and Bevan cellulose or sample of pulp is triturated with 25 cc. of 17.5% caustic soda solution till the mass is homogeneous, allowed to stand 30 min., and filtered with suction through an alundum (porosity R.A.98) or a Gooch crucible. After the insoluble is sucked practically dry it is loosened with a glass rod and washed, first with 4% sodium hydroxide (50cc.) and then with about 300 cc. of cold distilled water in small portions. Remove the residue from the crucible, dissolve in about 30 cc. of 72% sulphuric acid, make up to 100 cc. with 72% acid, to a 100 cc. aliquot add 10 cc. of standard potassium dichromate solution (90 g. per liter) and 60 cc. of 72% acid, boil gently for exactly 5 min., cool in ice and titrate the excess of dichromate with standard ferrous ammonium sulphate (159.9 g. per liter). The dichromate should be standardized against cellulose obtained by the Cross and Bevan chlorination method from sulphite pulp. The filtrate from the alpha-cellulose is diluted to 400 cc. and divided into equal parts. One part is diluted to 250 cc. To a 25 cc. aliquot add 5 cc. of standard dichromate and 60 cc. of 72% acid and treat as above, the result giving the sum of the beta-and gamma-cellulose. Precipitate the beta-cellulose from the other 220 cc. aliquot, (diluting to 250 cc. in a volumetric flask), let stand till the precipitate settles, pipette off a 25 cc. aliquot of the supernatant liquid, and treat as in the case of the beta-plus gamma-cellulose determination.-A.P.-C.

PROCESS CONTROL

C-1 E-1 G-1 H-1 K-1 Testing and Control Process in Paper Making. M. A. KRIMMEL. **Paper Trade J.** 76 No. 18, 57-62 (May 3, 1923). A brief outline of the raw material, process, and finished product control tests carried out at the Hammermill plant.-A.P.-C.

MECHANICAL PULP

D-4 Process of Making Mechanical Wood Pulp. E F. MILLARD. U.S. pat. 1,413,180, April 18, 1922. — Same as Can. pat. 215,314 Jan. 24, 1922. See **Pulp and Paper** 20, 888 (Oct. 12, 1922). **(Paper Trade J.** 74, No. 20, 54, (May 18, 1922).-A.P.-C.

D-4 Studies of Mechanical Paper Technology. F. BOHROFF. **Bumazhnaia Promyshlenost, I.** Nos. 2-3, 193-212 (Sept.- Dec. 1922). Data are given to show that 40 per cent of the total power consumed in the world's pulp and paper production goes for wood grinding. Even a small saving in the power consumed in the grinding operation would release a large amount of energy for other uses. The factors entering the grinding operation are combined with a mathematical equation depending upon the pressure n per sq. cm.. of the grinding roll. Giving definite values a curve can be drawn very similar to the one obtained by Kirchner

empirically è1) as **(Papier III A,** pa. 57), proving that the mathematical formula is correct.-M.L.C.

D-4 Grinding at High Temperatures. HOYER. **Papierfabr.** 21, 213-216 (Apr. 22, 1923). A general discussion of grinding wood at high temperatures.-J.L.P.

BLEACHING

H-4 Continuous Production of Chloride of Lime. OTTO NYDEGGER. Ger. pat. 370,841. **Papierfabr.** 21, 271-272 (May 27, 1923). Chlorine gas is conducted into an absorption apparatus in which finely divided lime is being stirred. The unabsorbed warm gas as cooled and again put through the absorption apparatus. -J.L.P.

H-5 Bleach Studies on Wood pulps. II. CARL G. SCHWALBE and HERMANN WENZL. **Papierfabr.** 21, 268-270 (May 27, 1923). During the bleaching process a considerable quantity of carbon dioxide is, evolved, amounting to 0.26-0.28 g. CO_2 per 100 g. of pulp when treated with 1 g. of chlorine. This leads to the formation of $CaCO_3$ consequently a depression of the H. concentration, thus slowly bringing the bleaching process to a standstill. By heating the bleach bath to 30-35°C. and by subjecting the stock to a vigorous movement, the solubility of the CO_2 is considerably decreased, the formation of the deleterious bicarbonate prevented and the bleaching action accelerated. An air blast has only a mechanical effect in that it removes the CO_2.-J.L.P.

PREPARATION OF PAPER PULP

K-4 Recovering Constituents of Waste Bituminous Felt Products. L. KIRSCHBRAUN. U.S. pat. 1,417,-840, May 30, 1922. The material is mechanically disintegrated in the presence of a hot emulsifying agent such as clay and water which serves to soften the material and reduce it to a uniform pulp.-A.P.-C.

K-7 Beater. SIGURD SMITH. Fr. pat. 549,522.—the beater is equipped with two or more bedplates which must be at least 100 to 120mm. from one another. In the space between the bedplates fresh stock is forced into the spaces between the roll fly bars so as to expose a fresh portion of fibers to the beating action of the next bedplate. (See Smith's article on the "Fibrage Theory" of beating in **Paper Trade J.** 75, No. 26, 47-48 (Dec. 28, 1922); 76, No. 1, 49-53 (Jan. 4, 1923); and in **Paper 3**2, No. 3, 5-8 (May 9, 1923); No. 4, 5-10 (May 16, 1923).-A.P.-C.

K-7 A New Continuous Beater. Paper Ind. 5, 339-340 (May 1923). — Brief enumeration of the merits of the Murphy hollow midfeather continuous beater for mixed waste paper, which, it is claimed, will prevent all foreign matter from entering the stuff chest and eliminate rags, sticks, strings, wire, etc., from collecting in the valves.-A.P.-C.

K-7 Process of Beating Fibers for the Manufacture of Paper. EMIL RYBERG and P. C. SCHAANNING. Ger. pat. 375,576. **Papierfabr.** 21, 280 (June 3, 1923). To decrease power consumption and to facilitate beating at a high pulp consistency in a conical mill, compressed air or other gas is added to the mixture of fibers and water before it enters or during its progress through the mill.-J.L.P.

K-7 Beating Engines for the Manufacture of Paper. ANON. **Wochbl. Papierfabr.** 54, 1041-1044 (Apr. 14, 1923). Brief descriptions, with sketches, of the Karger, Taylor, Hemmer, Acme, Krons, Wrigley, Umpherston, and Goepel types of beaters.-J.L.P.

K-7 Pulp Disintegrating Machines. ANON. **Wochbl. Papierfabr.** 54, 1239-1241 (May 5, 1923). The Hoffsummer and Kirchner centrifugal beaters are sketched and described.-J.L.P.

K-7 Device for the Treatment of Pulp made from Sedges, Grasses and Reeds. JOHANN J. GAHLER. Ger. pat. 374,192; addition to 370,347. **Papierfabr.** 21, 238,-239 (May 6, 1923). Blunt beater knives are employed to avoid cutting the fibers.-J.L.P.

FILLERS

K-9 Filler for Paper Pulp. G. ACHESON. U.S. pat. 1,419,951, June 20, 1921. —A filler such as white clay is deflocculated preparatory to mixing it with paper pulp. in order to form a mixture with which rosin size and alum may combine.-A.P.-C.

K-9 Loading Paper Pulp. F. REICHARD. Eng. pat. 177,137, Nov. 24, 1921. — Same as Ger. pat. 349,882. See **Pulp & Paper** 20, 702 (Aug. 17, 1922). **(Paper Trade J.** 75, no 4, 53 (July 27, 1922).-A.P.-C.

K-9 Filler for Paper. W. HOSKINS. U.S. pat. 1,-424, 306, Aug. 1, 1922. — Powdered calcium sulphate or clay particles are coated with a calcium soap.-A.P.-C.

K-9 Paper Filler. W. N. KOHLINS. U.S. pat. 1,390,-927, Sept. 13, 1921. — The composition is formed of precipitated magnesium hydroxide, calcium sulphate, aluminium hydroxide and slaked lime.-A.P.-C.

SIZING

K-10 Engine Sizing Paper. H. M. WHEELWRIGHT. U.S. pat. 1,430,045, Sept. 26, 1922. — Previously boiled soluble modified starch is mixed with rosin size, diluted and mixed with paper pulp in a beater to effect precipitation of the resin in colloidal condition and economize the process with respect to the amount of rosin required.-A.P.-C.

K-10 Sizing Composition. W. P. UPHAM. U.S. pat. 1,392,988, Oct. 11, 1921. — The composition consists of starch hydrolyzed under pressure, rosin, soda, soap, oil, and clay or satin white.-A.P.-C.

K-10 Use of Rosin Size in Paper Making. A. E. LEICESTER. **World's Paper Trade Rev.: Paper** 32, No. 2, 5-6, 24, 26 (May 2, 1923). — Brief discussion of English practice, bringing out some of the difficulties encountered and outlining methods of overcoming them.-A.P.-C.

K-10 Rosin Sizing. J. A. DECEW. U.S. pat. 1,394,-610, Oct. 25, 1921. —Five to 15 parts of a melted wax, e.g., paraffin of or vegetable oil, pitch, or hard fat, are mixed with 100 parts of melted rosin to improve the water repellent properties of sizing.-A.P.-C.

K-10 Method for the Emulsification of Rosin soap in Water. O. KAMM assignor to American Writing Paper Co. U.S. pat. 1,415,363, May 9, 1922. — Rosin size containing free rosin is incorporated with water in the proportion required to yield at the operating temperature a practically clear size-in-water emulsion. The emulsion is stable at approximately the boiling point, and can be diluted to an extent by introduction while hot into additional water.-A.P.-C.

K-10 Rosin Sizing. J. A. DECEW assignor to Process Engineers, Inc. U.S. pat. 1,433,124, Oct. 24, 1922.— Rosin for use in sizing paper is incorporated with 5 per cent of rubber by use of a common solvent such as gasoline which is afterwards evaporated.-A.P.-C.

K-10 Sizing for Paper. J. H. RYAN. U.S. pat. 1,-434,227, Oct. 31, 1922. — A thin doughy mixture if formed of satin white, clay and water, ground in a pebble mill, mixed with a usual sizing solution, which may contain casein glue or hydrated starch, and the mixture is further ground together to eliminate all grit.-A.P.-C.

(Continued on page 830)

British Trade News

PAPER FROM STRAW PULP

(From Our London Correspondent)

July 27, 1923.

Sir Fred Becker, the pioneer of Canadian pulp in the British market, is at present in Canada on a three months visit. Always bent on something new in the shape of pulp—or the nearest thing to it—he is now investigating the local conditions of the Canadian Prairie Provinces in connection with big-scale experiments about to be carried out at Northfleet, Kent, (England), for turning straw fibre into paper pulp. As is well-known the subject is not new but the fact that Sir Frederick Becker is devoting time and money to it will cause considerable interest in the revival of experiments amongst paper and pulp men on each side of the Atlantic.

Before sailing from England, Sir Fred Becker circulated the following letter to some of the important newspapers in the United Kingdom:—"The two-fold importance to the British Empire of an experiment about to be made in Kent, should not escape the attention of those of your readers interested in the deliberations of the coming Imperial Economic Conference (in London during October). Much of the time of that conference will be occupied in debating how best to use to the full advantage our Imperial resources, particularly in regard to developing vast territories at present unpeopled in Australasia, Africa and Canada. The last named Dominion alone possesses 300,000,000 acreas of land suitable for farming, of which as yet only one-sixth is under cultivation. A striking fact about the millions of Canadian acres, which are being farmed is that practically the whole of their enormous annual yield of straw is a waste product; after every harvest it is largely burned. If, however, the experiments to be carried out in Kent are as successful on the big scale as they have been in France, it will in the future be a practicable thing to buy all the straw from the farmer and to turn it into pulp in the Prairie Provinces for the higher grades of paper. Evidently we have here the seedling of a gigantic new industry which will benefit the man on the homestead, give employment to thousands of pulp and paper makers and offer a further attraction to intending emigrants. But it will do more than that; it will bring nearer that ideal of a self-supporting British Empire so eloquently advocated at the last Empire Press Conference."

Sir Fred Becker is on the spot now for Canadians to solve the problems with him. He is deeply interested in the subject and should be given all the help and advice required to save what has hitherto been fuel for the harvest rubbish fire.

The Pulp Situation

The volume of business passing is not great. For chemical pulp prices are inclined to stiffen; for groundwood supplies are finding a splendid channel, thanks to busy newsprint mills, and prices are steady. Quotations in London are about as follows: —

Bleached sulphite (No. 1) £21; Easy bleaching (No. 1) £16 1-2; Sulphite, newsprint quality £15 1-2—£16; unbleached soda (No. 1), £16 1-2; soda kraft, £15 1-2—£15 1-2.

The first half year's imports from all sources have reached 480,597 tons, compared with 305,250 tons for the corresponding period in 1922. The imports for June were 148,526 tons—an increase of 60,751 tons over June 1922. Six months' supplies have arrived as follows: Bleached Chemical (dry) from Finland, 1,369 tons (447 for 1922); Sweden, 2,004 tons (2,874); Norway 7,972 tons (4,682 tons); Germany, 254 tons (497). Other sources 830 tons (567 tons). Total 12,429 tons compared with 9,067 tons for the same period in 1922.

Unbleached Chemical—From Finland, 32,252 tons (20,648 tons for 1922); Sweden 75,315 (43,198); Norway 39,761 tons (26,852 tons); Germany, 7,555 tons (1,176 tons). Other sources 13,726 tons (4,853 tons). Total, 168,609 tons.

Groundwood (wet)—Sweden 45,977 tons (36,668 tons); Norway 200,679 tons (126,587 tons); Canada 31,264 tons(21,851 tons); other sources, 3,173 tons (2,659 tons). Total 281,093 tons compared with 187,765 tons for the same period in 1922.

The imports of groundwood (dry) were 11,908 tons, an increase of 8,783 tons over 1922.

The increase in the case of Canada is notable and it is hoped the second half of the year will see another increase from the Dominion. In Scandinavian circles the pulp market is quiet and prices are steady.

Paper and Canadian Wrappings

The imports of paper for the six months ending June 30, reached 5,678,352 cwts. compared with 4,586,518 cwts. in 1922. The exports of the British mills were 2,083,093 cwts. as against 894,957 cwts. in 1922.

Of the imports, there is a reduction in shipments of newsprint from Canada. But packing and wrapping papers from the Dominion arrived in increased shipments, the total 52,130 cwts. comparing very favourably with 39,816 cwts. for the six months in 1922. Shipments from Scandinavia were 974,275 cwts.; Finland 182,533 cwts.; Germany, 480,115 cwts and Belguim 37,502. Canadian wrapping papers are finding a good outlet in the British market, but, of course, it will take considerable time and trouble to beat down the cheap and inferior qualities dumped on the market from Scandinavia.

The prices for papers in England and Scotland are at present a burning subject and British mill owners are complaining of their meagre profits on orders executed. Competition is very keen and this with the price of pulp at present makes it difficult for the British mill to compete with the quotations of the Continent. A noticeable feature of the trade is the great development in wrappings, kraft paper, etc. Canadians should keep a sharp eye on this section of the market and particularly at this time of the year.

Mill Development

William Tod, Junior, (1923), Ltd., has been formed to take over the business of William Tod Junior and Co., Ltd., of Springfield Mill, Polton, and the recently established Indurite Products Co., Ltd. The capital is £190,000. I mentioned some time ago that the Tod firm, as a result of research work, had perfected a process for mill waste and converting it into vulcanite or ebonite. Vulcanite, or ebonite, has a big demand in England. It is produced at a low cost and is most suitable in the case of insulation. The Springfield mill has two papermaking machines and considerable new machinery was installed between 1910 and 1914 at a cost of £30,000

Big Dock Scheme

The London Port authority is going to spend £5,000,000 on a new dock and other works. The works will include improvement to the pulp and timber dock, which will be brought up to modern requirements.

Some Profits

Amongst recent reports on profits from mills are included the following:—Guard Bridge Paper Mill, 5 p. c. on preference shares, 10 p. c. (last year 5 p. c.) on the ordinary.

Colthrop Board Mill, profit £2,244—profit insufficient for dividend to be paid.

PULP AND PAPER NEWS

According to a Montreal Employment Agency, there is a shortage of help in the Ontario and Quebec pulp and paper mills as well as in logging operations. The men required for the pulp and paper industry are of the unskilled character.

Edward Beck, Secretary of the Canadian Plup and Paper Association, and J. N. Stephenson, Editor of the Pulp and Paper Magazine, attended meetings of the Imperial Forestry Conference in Ottawa last week.

The new Ferguson administration in Ontario has already put into effect several economies in connection with the Forests and Lands Department and several others are in contemplation. Arthur W. Roebuck, who had been retained by the Drury Government to investigate certain lumber companies and seek to press cases in the courts against them, has been let out, and the expensive probings have been abandoned. It is stated that this new policy is having a favorable effect on the development of the lumber industry in the province. Another activity of Hon. J. W. Lyons, new Minister of Lands and Forests, is the review of several of the larger timber deals of the late Government. Notable among these are the English River-Backus transaction, and the sale of the Pic and Black Sturgeon limits near Port Arthur on which timber was sold at low prices. These cases have not yet been dealt with in Cabinet Council but will be brought up for review shortly. There is talk of the cancellation of some of the contracts, not that operations commenced may be terminated, but that more satisfactory prices for timber sold at too low prices may be realized.

S. J. Frame, of Toronto, prominent through his secretarial work for various paper trade organizations, has gone on a pleasure trip to Great Britain where he will enjoy a well-earned holiday for some weeks.

George Carruthers, Toronto, head of the Interlake Tissue Mills, Limited, Thorold, Ont., was in Montreal last week attending a meeting of the tissue paper section of the Canadian Pulp and Paper Association.

The Abitibi Power and Paper Company, Iroquois Falls, Ont., are taking steps towards the organization of a safety association among the mills' forces and the secretary-engineer, of the Ontario Pulp and Paper Makers' Safety Association, A. P. Costigane, will shortly visit the plant to help map out a plan of campaign.

A. P. Costigane, secretary-engineer of the Ontario Pulp and Paper Makers' Safety Association, has returned to Toronto after a pleasant ten-days vacation spent at Big Bay Point, Lake Simcoe. While there Mr. Costigane was active in the organization of a fancy dress ball at which a nice sum was realized for the Fresh Air Fund for children.

H. C. Woods, general manager of Warwick Brothers and Rutter, Limited, manufacturing stationers, Toronto, returned to that city last week after a couple of months spent mostly in England. Mr. Woods' many friends will be pleased to learn that he is much improved in his general health and that he has regained most of his accustomed pep and vigour. While in the Old Land Mr. Woods visited many of the paper institutions in search of new ideas with the result that he is more deeply impressed than ever with the pre-eminence of Canada as a producer of paper, of converted paper and of selling and business methods generally. In conversation with the Pulp and Paper Magazine of Canada Mr. Woods declared that the Canadian market could supply everything necessary in the way of paper and paper products and manufactured lines. "Our Canadian paper trade can sell goods in the British market but there is nothing there in paper and paper products that we have to buy," is the way he put it.

S. F. Duncan, secretary-treasurer of the Provincial Paper Mills, Limited, Toronto, and Charles Buss, of Thorold, superintendent of the St. Lawrence and Montrose Divisions of the company, left Toronto last week for Port Arthur on a visit of inspection to the new book paper mill which is now reported to be running at full capacity.

C. Smith, head of Brantford Stationers, Limited, was a caller on the paper trade in Toronto last week.

The Interlake Tissue Mills, Limited, have just put on the market a neatly made up carton containing 100 bleached white folded Interlake crepe paper napkins so that the thrifty housewife can now buy her box of paper napkins as she would purchase her box of matches. The package is also of benefit to the retail grocer or other dealer for it is tightly sealed and impervious to shelf wearing. It is designed for continuous use in the household where the napkins will be drawn from the package as required instead of lying loose under the the old system of buying loosely by quantities. The novelty promises to be a popular one in the tissue paper trade.

J. O. McKerrow, traffic manager of the Abitibi Power and Paper Company at Iroquois Falls, Ont., was sent up for trial by the Barrie, Ont., police magistrate last week on a charge of manslaughter in connection with the death of S. T. Dunsmore who received fatal injuries when he was struck by Mr. McKerrow's automobile on June 17. Mr. Dunsmore was crossing the provincial highway in front of his own gate near Crown Hill just after getting out of another automobile, when he was struck by the McKerrow car. The Coroner's' jury did not place the blame on anyone and the defence counsel, for this reason, endeavored to have further action dropped. The Crown, however, decided to press the matter. The accused will come up for trial on Sept. 25 and in the meantime is out on $8,000 bail.

The Mattagami Pulp and Paper Company's plant at Smooth Rock Falls, Ont., operated at full capacity during July and turned out a little better than 4,000 tons of unbleached sulphite pulp. The company just now is relining the digester and it is expected that the two Canadian Barking Drums now being installed will be in operation by Sept. 1.

With the placing in commission of the new wrapping paper machine the program of expansion at the mill of the Dryden Paper Company, at Dryden, Ont., is now practically complete. The daily capacity of the machine is from 10 to 15 tons of paper, bringing the total capa-

city of the plant to 50 tons daily of heavy and light weight kraft and wrapping papers. The pulp mill has a daily capacity of 75 tons of kraft pulp. The wrapping paper has always been the profitable end of Dryden's business and its losses in the past are said to have been due largely to the necessity of selling kraft or sulphate pulp at less than cost of production. The new machine capacity means that a larger proportion of the company's pulp is converted into paper within its own organization. The excess pulp is now being marketed without loss.

According to reports from the Riordon Company the Kipawa and Hawkesbury mills are operating to capacity. It is stated that the company have disposed of more than half the lumber cut already, and altogether conditions are very much improved over those of a year ago. There is no sign of a decline in the strong demand for bleached sulphite pulp which is the company's Canadian product. It is stated that it will be several weeks yet before formal announcement is made concerning the company's plans of reorganization and financing.

Charles F. Mansell, of the Toronto sales staff of the Howard Smith Paper Mills, Limited, has returned from Fort William where he was during the past week attending the annual convention of the Sovereign Great Priory of Canada which will meet in Windsor next year. Mr. Mansell is a veteran Grand Treasurer of the organization of which he has been a member for a considerable period.

John Glanville, of Thessalon, Ont., expects to have his entire winter cut of pulpwood, 7,500 cords, delivered to the mills shortly. This means the distribution of $60,000, or more, over a large territory, as the timber was purchased from settlers, most of who only had small quantities to dispose of. Mr. Glanville has already delivered 5,000 cords to the mills.

E. W. Bowness, of the Empire Engineering Company, Edmonton, Alberta, has returned to that city from a visit to Stewart Lake in Northern British Columbia. Mr. Bowness is consulting engineer for the hydro-electric plant which proposes erecting a large pulp and paper mill in connection with the Isle Pierre rapids in the Prince George territory, his mission in the north being the estimation of water storage for the use of the proposed plant. He was accompanied by Robert Tyhurst, the representative of the pulp company, and Jack Bremner and F. P. Burden. Stewart and Tremblar lakes were visited by the party. Mr. Tyhurst has been interested in Northern British Columbia for the past three years, the company which he represents holding no less than 250 timber berth licenses. If the pulp and paper mill project goes ahead it will mean the establishment of a sixty-thousand horsepower plant and the expenditure of millions of money.

NEW BRUNSWICK NEWS

Despite the fact that pulp and paper interests in conjunction with lumber interests of New Brunswick have been emphatically opposed to increase in rates by the Workmen's Compensation Board, of New Brunswick, an increase has been made. This increase, retroactive from June 29 is $2.00 on pulp and paper mills. On planing and moulding mills the increase is $2.00. On saw mills the increase is $3.00. On logging, booming, river driving there is an increase of $4.00 On artificial limbs the increase is $0.50.

Despite the active campaign of the New Brunswick Lumbermen's Association which is headed by Angus McLean, of Bathurst N. B. and H. E. Beedy of St. John, N. B. two men identified prominently with the pulp and paper trade in New Brunswick, the board has announced the increases as noted. Apparently, there is to be no relief for the pulp and paper industry from the heavy burdens placed on it by the New Brunswick Workmen's Compensation Board. Pulp and paper men are strenuously objecting to the increases. Among those vitally affected by the increases not only in the clause covering the pulp and paper mills but the logging, booming, river drivin,g etc., totalling an increase of $6.00 are; Fraser Companies Limited,; Nashwaak Pulp and Paper Company; St. George Pulp and Paper Company; Bathurst Company; Hollingsworth and Whitney who are building a paper mill at St. Stephen will also be affected. International Paper Company which is expected to build a paper mill at Grand Falls will likewise be affected.

JAPAN'S PULP & PAPER IMPORTS

Pulp Imports in May in Japan

yen = 50 c. U. S. Currency.
kin = 1.33 lbs.

Ports	Mechanical Pulp	Chemical Pulp	Value
Yokohama		1.746.300 kin	yen 185.100
Kobe		2.166.300 kin	206.906
Moji			
Totals		3.912.600	392.006
			Totals
Jan.-May 1923	225.400 kin	19.138.900 kin	19 364.300
	yen 16.632	yen 1.892.709	yen 1.909.341
Jan.-May 1922	2.824.300 kin	59.095.000 kin	61.919.300 kin
	yen 242.466	yen 6.482.302	yen 6.724.768

Countries imported from in May

England	423.800 kin	= yen	57.000
U. S. A.	511.100		67.882
Sweden	100		8
Germany	84.800		10.447
Norway	346.200		41.122
Canada	2.546.600		215.547
Totals	3.912.600		392.006

ONE CORD OF WOOD PRINTS 96,000 PAGES

In response to an inquiry, "how much wood it takes to make a 24 page newspaper," Mr. W. G. MacNaughton, secretary of the Technical Association of the Pulp and Paper Industry, offers the following:

One ton of newsprint contains roughly 1,500 pounds of mechanical wood pulp which in turn represents 5/6 cord of rough spruce wood, together with 500 pounds of sulphite (chemical wood pulp), representing ½ cord of spruce wood.

One ton of newsprint, therefore, represents 5/6 + ½ = 1 1/3 cords of wood.

The "New York Times" weighs approximately 6 ounces to 24 pages.
1 pound of newsprint = 64 pages New York Times.
2,000 pounds (one ton) = 128,000 pages.
1 1/3 cords wood = 128,000 pages.
1 cord = 96,000 pages = 4,000 copies of 24 page papers as "New York Times."

This is a fairly close approximation and about as near as can be calculated for the average conditions.

Be wise today that you may be whole tomorrow.
Never step over one duty to perform another. Take the nearest first.

UNITED STATES NOTES

Low water conditions caused the mills of the International Paper Company to operate last week at 93 per cent, of what is regarded as normal production. Other Eastern paper mills have been more seriously affected, production being curtailed from 10 to 30 per cent. in some cases. Demand for news print continues strong, and there is every indication of a large fall business. The International has large orders to fill and is operating at maximum.

Officials of the American Writing Paper Company have completed plans for a resumption of operations at its mills in Holyoke this week. The plant of the company has been closed since July 18 by a strike of union stationery firemen who walked out for a wage increase. Officials declined to state whether union or non-union firemen would be employed.

In a statement reviewing preliminary statistics of the pulp wood industry, the Department of Commerce announces that consumption of pulp wood in the United States during 1922 was 21.8 per cent. greater than in 1921, but 9.2 per cent less than in 1920, the year of the largest consumption on record. The total consumption of pulp wood last year, as reported by 241 mills, was 5,548,842 cords, compared with 4,557,179 cords consumed by 254 mills in 1921. More than 54 per cent. of the wood used for pulp last year was spruce, 16.1 per cent. was hemlock and 6.7 per cent. was yellow pine. The production of wood pulp was 3,521,644 short tons in 1922, compared with 2,875,601 tons in 1921. Of the total amount in 1922, 1,483,787, tons were produced by the mechanical process, 1,374,319 tons by the sulphite process, 419,857 by the soda process, and 243,681 tons by the sulphate process. Maine, Wisconsin and New York are the leading States in this industry. In 1922 these three States reported 56.8 per cent of the total consumption of pulp wood and 59.7 per cent of the total production of wood pulp.

A damaging fire broke out last Friday in the Santa Barbara forest, California, and swept rapidly over a ten- mile front, destroying much timber as well as dense masses of underbrush. Mount McKinley and Santa Cruz Mountain have been converted into blackened peaks. The flames have swept down Grape Creek to the Santa Cruz Creek Fork and a widened area of the Matzana Forest Reserve has been burned over.

The New York State College of Forestry, Syracuse University, sees in the proposed pulp wood embargo an argument in favor of the adoption of early reforestation measures in the United States. According to the forestry school's latest bulletin, most of the pulp and paper mills in the United States would be compelled to locate in Canada or shut down if an embargo on pulp wood should be enforced. More forests are sorely needed in the United States, the college says, and the sooner a start is made in the planting of trees on an adequate scale the sooner will this threat to one of the nation's big business interests disappear. (Editorial note: It is untrue that **most** of the United States mills would even be affected. Only one fifth of the total wood supply is involved at all.)

In a report to stockholders, S. L. Willson, President of the American Writing Paper Company, declares that with the addition of further working capital the company's future success can be assured. "In April," Mr. Willson says, " a complete change in the company's management took place. The present organization is one composed of men of executive ability, long experience and practical knowledge of paper manufacturing and merchandising, and never in the history of the company have its affairs been in more competent hands. The savings alone to be effected under the plans of present management will be large." The balance sheet of the company as of April 30 last follows: Cash $528,820, against $1,206,754 on December 30, 1922; inventories, $4,207,863, against $4,557,754; surplus, $3,618,417, against $5,286,402. Total assets-liabilities, $39-629,191, compared with $40,414,560 on December 30, 1922.

One of the tangible results of the recent visit to Alaska of the late President Harding which otherwise plunged the nation into grief and mourning, is that the Forest Service is out to develop there a permanent industry—as permanent as the vast paper industry of Norway and Sweden. The Forest Service is trying its level best to exploit the paper industry and encourage the use of its timber generally. It has spent $60,000 in the survey of power sites and the location and appraisal of the best areas for the sale of pulpwood. The Forest Service regards the development of this industry as one of its prime functions. In the Tongass National Forest alone fourteen units have been defined for the establishment and perpetual supply of pulp and paper plants.

Each unit contains feasible water power sites, manufacturing sites, and deep channel transportation—deep waterways which cut everywhere right into the heart of the forest — together with sufficient timber to provide not less than forty-five years' supply for a paper mill with a capacity of a hundred to two hundred tons daily. What is more, the area of timber-growing land in each of these units is sufficient to produce a perpetual supply of pulpwood for the plant. The Forest Service does not want the forests to be "locked up"; neither will it allow them to be recklessly exploited. It has simply got things fixed so that when market conditions justify the investment a great industry can be developed in Alaska with benefit to the Territory and without that irreparable damage which would have been done to all the natural resources had it not been for Roosevelt and Pinchot and the conservation doctrine which they preached. The forests covering the mountain slopes around Ketchikan are a truly imperial natural resource of the Territory. They cover something over 20,000,000 acres — a ribbon of spruce and hemlock along 15,000 miles of shoreline. Col. Greeley, head of the Service, estimates that there is at least 100,000,000 cords of papermaking wood in these forests which should in time be the base of a great pulp and paper industry.

The talents, ours to-day, may be demanded by the Owner to-morrow.

(Continued from page 825)

K-10 Sizing Paper Stock J. A. DECEW, assignor to Process Engineers, Inc. U.S. pat. 1,444,956, Feb. 13, 1923. — Filling material such as clay in aqueous suspension is treated with a dilute colloidal aqueous solution of a free rosin size and after thorough mixing of the ingredients they are added to paper stock in a beating engine.-A.P.-C.

K-10 Colloid Studies in the Rosin sizing of Paper. RUDOLF LORENZ. **Papierfabr. 21, 221-225** (Apr. 29, 1923); 229-235 (May 6, 1923); 241-248 (May 13, 1923); 253-259 (May 20, 1923); 265-268 (May 27, 1923); 273-276 (June 3, 1923). (A series of articles to be reprinted later in book form.) A brief monograph on rosin is given, with especial reference to its use for paper sizing. The fundamentals of colloid chemistry are covered as far as they relate to the colloid nature of rosin sizing. The concept of L. Paul, that there is a series of abietic acids with different contents in colloidal water, was confirmed. His conclusion, however, that these hydrate combinations can be treated as stochiometrical constants was not found true. The striking change in the physical nature of dispersed rosin owing to slight increases in temperature is the explanation offered for the sizing troubles incident to operating with hot stock in the beater. When abietic acid-acetic acid solution is cooled, a coarsely dispersed separation does not occur at once, but after an hour a typical colloid is obtained. P. P. von Weimarn's rule, that with extreme concentrations a precipitate occurs, in a very finely divided form and with moderate concentrations a coarse precipitate occurs, was observed with abietic acid hydrosol. Also the crystalline nature of the colloid phase, assumed by von Weimarn, was occasionally recognized. The peptizing action of hydroxyl ions on rosin was studied, as well as its colloidal characteristics by means of colloid-chemical methods. Sodium resinate soap in water occurs within the limits of the molecular and the colloid states, and only in very concentrated solutions does it assume the emulsoid state. "Free rosin" is identified as a typical suspension colloid with a negative charge. "Size milk" is a free rosin hydrosol, peptized by the resinate of hydroxyl ions. Surface tension-concentration curves of rosin size solutions of varying alkali content are sketched and described, and their practical use demonstrated. A very exact control of the manufacture of rosin size can be exercised by means of the drop count test. By these tests, the amounts of total and free rosin in size milk can be determined. Under "dynamics of rosin sizing", the author considers the equilibrum changes occurring in the beater during the sizing process. The precipitating actions of a number of salts on the abietic acid hydrosol are tabulated. With increasing charge on the action, there is an increase in flocculation intensity; on the other hand, the anions exert a peptizing action. The effect of impurities in the water on sizing is shown. The positively charged aluminum hydroxide acts as an "electrostatic adhesive" with the negatively charged fibers and rosin, thereby producing an isoelectric state.-J.L.P.

PAPER MACHINES

K-12 Comparison of Drier Felts. Mon Papeterie Française 54, 83-84 (Feb. 15, 1923). Brief outline of the relative merits and demerits of wool, cotton, and asbestos drier felts.-A.P.-C.

K-12 Use of the First Press Felt. STEVE CHAMBERS. **Paper Mill** 47, No. 15, 18 (May 19, 1923). In order to maintain proper production on a high speed machine the first press felt should be both strong and open to allow the water to drain through rapidly. An apparently under-napped felt requires less washing than one having a full nap, for the fine-particles of stock will adhere to the drawn out fibers of the felt, causing pinholes in the sheet and shutting off much of its openness, while the short-napped felt will not do this so readily. Running the felt slack while wetting so as to let it become taut through shrinking is not considered wise. — A.P.-C.

K-12 Paper Making Felts. JEAN REGNIER. **Papier** 26, 65-70, 189-194, 309-318, 437-445 (Jan., Feb., Mar., Apr. 1923). A detailed description of the manufacture of paper making felts, of the characteristic properties of the various kinds of felts (couch, press, drier, special), and of the care which they should be given and of the various causes of wear and deterioration to which they are subjected.-A.P.-C.

K-12 Device for Allowing the use of Last Press Felts Till Completely Worn without Removing from the Paper Machine. A. NACHTEGAEL. Fr. pat. **Papeterie** 45, 343-344 (Apr. 10, 1923). A suitable drier is provided for the felt. It is claimed that this allows of appreciable reduction in the pressure at the presses with consequent increase in the life of the felt, better draining of the water through the felt with consequent increase in the dryness of the sheet entering the driers and decrease in steam consumption at the driers and increase in the life of the drier felts, decrease in loss of time owing to fewer stoppages of the machine, and possibility of increasing the speed of the machine and consequently increased output.-A.P.-C.

K-12 Electric Sectional Drive for Paper Machines. W. STIEL. **Wochbl. Papierfabr.** 54, 609-612 (Mar. 3, 1923); 697-698 (Mar. 10, 1923). The first article is a general discussion of electric motors for paper machine drives. In the second, the advantages of polymotor drive over single motor drive are: greater accessibility, less hazardous, possibility of operation of each individual unit. A brief sketch of the development of polymotor drive is given.-J.L.P.

K-12 Progress in Paper Machine Sectional Drives in America. W. STIEL. **Wochbl. Papierfabr.** 54, 832-833 (Mar. 24, 1923). Data on 30 electric sectional drives employed in U.S. and Canada are tabulated.-J.L.P.

K-14 Methods of Calender Operation. ERNST. BLAU. **Wochbl. Papierfabr.** 54, 903-906 (Mar. 31, 1923). The development of calender operation from a power standpoint is outlined. Especial mention is made of the use of the electric motor.-J.L.P.

COATED PAPERS

K-19 Coating Composition of Paper. H. N. CASE. U.S. pat. 1,445,387, Feb. 13, 1923. — A paper coating mixture is formed of clay 39 lb., water for the clay 28 lb., gelatin 74 oz., water for the gelatin 15 pt., a 10% caustic soda solution 90 cc., and coloring material, e.g., paranitraniline red.-A.P.-C.

K-19 Coated Paper. H. R. RAFSKY. U.S. pat. 1,374,112, Apr. 5, 1921. — The surface of the paper is coated with a pigment produced by the interaction of sodium carbonate and slaked magnesian lime in an aqueous medium, and an adhesive.-A.P.-C.

K-19 A Fibrous Coating for Paper. JOHANN PALMEN. Ger. pat. 372,870. **Papierfabr.** 21, 227 (Apr. 29, 1923). A fibrous coating is applied to paper by sprinkling fibers on paper which has been coated with an adhesive, as dextrine. The sheet is then pressed and dried by passing between head rolls.-J.L.P.



CANADIAN TRADE CONDITIONS

Montreal, August 14. — Reports by jobbers and representatives of mills agree that the paper trade has declined somewhat. Those who have hitherto been disinclined to admit a falling off in orders now declare that the volume of trade is lower. A part of this slackness may be attributed to seasonal dullness. There is however no cause for pessimism, for there is certain to be a revival.

Competition both by mills and jobbers is keen. From the mill point of view, Canada is consuming too much paper produced outside the country. The consumer as a rule cares little or nothing as to the country of origin, what he wants to know is whether the qualities and price are right, and the jobber is out to satisfy that demand regardless of where the paper is made.

The trade in cheap toilets may be cited as an example of the competition by mills outside Canada. About three weeks ago a meeting of the tissue and toilet section of the Canadian Pulp and Paper Association was held in Ottawa to consider the situation. The result is a reduction of a cent to a cent and a half per pound in cheap domestic tissues.

Looking at the situation from a broader point what is the immediate outlook for the paper industry? The general commerce of the country is largely influenced by agriculture, the greatest of our basic industries. A poor harvest means less purchasing power for the farmer and therefore a lessened demand for general commodities including paper. Reports from all over the Dominion are to the effect that there is an abundant harvest, although conditions naturally vary in districts. On this ground, we are justified in looking for a good general business in the fall, in which the pulp and paper industry will share. It is an industry which enters into every department of commercial activity, and is affected by the prosperity or depression of those departments. The outlook is hopeful for the balance of the year.

The production of newsprint in Canada and the United States is still at a high level. In June it showed a falling off as compared with the previous month, but this was only in line with precedent. Canada's output was 108,832 tons and that of the United States 133,692 tons. The totals for the six months were ahead of the corresponding period in 1922. Thus Canadian mills turned out 621,897 tons as against 516,506, and the United States 760,636 tons as against 690,142.

In the pulp department, groundwood continues to be the feature. Many inquiries have been received for the comparatively small amount available; prices are firm, with the outlook for an advance. Sulphite is a fair market, there being reports that some lots have been sold at a reduction. The demand for bleached sulphite is quieter, although the stocks on hand are not large and it is probable that these will be absorbed in a short time.

As an instance of the change in the lumber trade, consequent upon the expansion of the pulp and paper industry, it may be mentioned that none of the large producers in the Three Rivers district will cut deals for the English market. All the wood is required for pulpwood. It is not many years ago that these mills supplied large quantities of lumber for overseas.

Ontario Market News

As far as business conditions in pulp and paper circles in Ontario are concerned there is no improvement to record. The sales of paper and paper products are still feeling the effects of the holiday season and although a few lines are moving freely the trade generally is quiet although it is generally believed that the early fall will see a resumption of activity. At the moment, however, it must be said that the summer slump has not only been severe but it has been rather more protracted than was expected. The printing trade in most of the larger centres is only using moderate quantities of paper, although in the smaller places throughout the province the printers appear to be doing a better business than in cities like Toronto and Hamilton. Paper jobbers say that the consumption of paper in Toronto is unusually light and ascribe it to the holiday season. On the other hand paper manufacturers, notably the book mills, are fairly well satisfied with the volume of business passing, the bulk of it coming from the publishing houses. Kraft and wrapping paper mills have some orders ahead but they are not of large volume, while the converting trade, which, up till a few weeks ago was booming, is now complaining of a protracted summer dullness. The paper box industry is not buying as much box board as usual but it is stated that good business is in sight and that the fall will see container lines selling well.

PULP — Manufacturers of the various pulp lines say that although the market has been somewhat flat during the past few weeks there are indications that it is coming back as indicated by both enquiries and slightly increased business. Groundwood has been livening up a little in respect to demand and there is now a pretty good call for it created largely by the water shortage of mills in the United States. Ontario mills on the whole have been favored with good water conditions, the rains coming late and the water running off gradually. This gave the mills a chance to build up fair reserves. Paper mills, however, have not been buying heavy pulpwood stocks and their piles now are light, which means that they are more inclined to come into the market. While the prevailing quotation for groundwood is around $38.00 the pulp can be bought at a slightly lower figure. The general quotation on unbleached pulp is $65.00 but in some cases it has been hard to get this price on account of foreign competition. The market for regular grades of bleached sulphite is still around $85.00 and $90.00 with news grade at about $60.00.

NEWSPRINT —Newsprint mills are all busy and running to capacity and despite a slightly lessened consumption owing to seasonal conditions shipments to the publishers throughout the province show comparatively little slackening off. That the Fall will see an increased consumption of paper, surpassing that of the new record set up for the first six months of the present year, is the prevailing opinion in newsprint

circles. Whether or not there will be an increase in the price next year remains a moot point but in the meantime prices are holding firm.

TISSUE CHANGES — Some slight reductions in the lower grades of tissue papers were announced by the manufacturers last week. There are no changes in the prices of toilets but some slight alterations have been made in the methods of quantity shipments. The new prices on tissues are as follows: natural sulphite cap or No. 1 manila, 24 x 36, $1.30; 20 x 30, 90c.; Regular cap, 24 x 36, $1.10; 20 x 38, 80c.; manila tissue, 24 x 36, $1.00; 20 x 30, 80c.

NEW YORK MARKETS

New York, August 11 (Special Correspondence) — Most reports have told of a quickening of buying interest in paper this week. Inquiry from consuming quarters has increased perceptibly, and while actual demand has undergone but slight broadening, there seems to be a livelier market developing, and manufacturers and jobbers are getting their affairs in shape for bigger business which they expect.

Prices of paper in quite a few instances show an advancing tendency. No definite changes in an upward direction have yet been recorded, but with raw material rising at a rapid clip and with consuming inquiry for most kinds of paper on the increase, quotations display a hardening tone, and it would not be at all surprising to witness some fairly sharp upward revisions in the near future if demand from paper users develops in the volume that it at present gives promise of. There is no question but that manufacturing costs are advancing. Prices of nearly all descriptions of papermaking raw material are moving up, and labor is growing costlier all the time. The paper industry of course feels the great scarcity of common labor as well as other manufacturing industries, and it is necessary that paper mills pay high wages to unskilled workmen to get them and keep them. Moreover, advances in wages of skilled paper mill operatives have recently been put into effect which will in due time have influence on prices of finished paper.

It is hoped that the strike of stationery engineers in the fine paper mills in and around Holyoke, Mass., will be brought to an end next Monday. At any rate, the mill proprietors have announced that they will attempt to resume operatives of their plants Monday after a shutdown of close to a month; whether or not they will put on non-union firemen is not known, but it is expected that the trouble will be smoothed over somehow and the mills will resume work. The fine paper market is showing signs of increased activity. Consumers are placing orders in a consistent manner though mainly for small quantities of paper, and prices are firm. The curtailed production because of the shutdown of Holyoke mills has not disturbed quotations since manufacturers have been filling their commitments from stock, but it is presumed that mill stocks have been materially reduced which should make for a period of fairly large production during the next few weeks.

Newsprint continues in a strong market position. Prices are firm and the movement toward publishers shows no let-down. The Newsprint Service Bureau reports production in June in the United States at 133,692 net tons, 65 mills reporting, compared with an output of 138,868 net tons in May with 74 mills reporting, while mill stocks during June increased but slightly from 18,133 net tons at the beginning of that month to 19,514 net tons at the end of June.

Wrapping paper is in good demand but the great bulk of demand is being filled with imported kraft paper. Importers in New York are bringing in large amounts of wrapping from Germany and the Scandinavian countries, and they are marketing this paper at prices at least far enough under those prevailing on the domestic product to enable them to dispose of the supply imported. Domestic mills are securing fairly good business from converters, but are provided with a very narrow market among retailers because of the foreign product.

Buying interest in book papers is good, and demand is gradually though slowing expanding. Book mills in a majority of cases are well fixed with orders. Those that sell the bulk of their production on contract are running along at an even clip and are shipping paper regularly in comparatively large tonnage, while those depending on the transient trade are kept moderately busy. Prices have steadied following the recent marking down of quotations, and yet signs are not lacking that in some instances manufacturers are shading asking prices to land orders.

The price movement in box boards is upward. Sharp advancement in raw material has necessitated manufacturers raising quotations a little, and this has stimulated demand, so that mills are securing more business and at higher prices. Plain chip board is quoted at a minimum of $60 a ton f.o.b. New York, and a good many mills are asking $62.50 and $65. News board is quoted at from $65 a ton upward New York.

GROUNDWOOD — The market for mechanical pulp is growing stronger day by day. Demand is on the increase, and what is still more of a bullish factor, production is low owing to poor water conditions in grinding districts which prevent manufacturers from grinding at a normal rate. Producers, in fact, are very cautious about entering selling engagements. Most of them are conserving pulp on hand against commitments, and are selling only such surplus as they are fully aware they will not need themselves or do not owe on back orders, and the consequence is that consumers are experiencing considerable difficulty in locating all the supply desired and are paying higher prices. Canadian ground wood has been reported sold at $45 a ton f.o.b. grinding plants in some cases, and it is said that the lowest which grinders across the border will consider is $40 at shipping points. Domestic producers quote between $36 and $40 a ton at pulp mills, the lower prices being due to greater moisture in domestic groundwood than in Canadian pulp and the resultant higher freight on the former. Dealers are bullish and are predicting groundwood will go to $50 a ton before the end of August. Consumers in the Wisconsin district are reported especially bare of supplies, and a great part of the present movement is in that direction.

CHEMICAL PULP — Probably the most important development in chemical pulp is that Norwegian manufacturers and shippers have withdrawn all quotations and have advised importers in New York that there is every likelihood of a strike in the pulp and paper industry of that country becoming effective on August 23. The pulp and paper mill employes in Norway are

demanding an advance in wages in the new yearly agreement with manufacturers which is due to become effective August 15. The mill owners are understood to be unwilling to grant the increase asked, and the workers' union has served notice that unless the agreement to cover the forthcoming year is arranged and the advance granted in the meantime they will go on strike August 23. Should the strike take place it would likely result in available supplies of pulp in Norway being greatly reduced, which would undoubtedly make for a rise in pulp prices.

About the only change of consequence in the market here this week has been a little easing of prices on kraft pulp. Importers who up to a few days ago were reported holding firmly for at least 3.35 cents a pound ex dock New York for Swedish kraft are now said to be showing willingness to sell at 3.25 cents, while it is authoritatively said that a 5,000-ton lot of foreign kraft pulp of other than Swedish origin was sold to a Middle West board mill at 3 cents a pound on the dock New York, this pulp of course being for forward shipment from abroad. Unbleached sulphite is quotably firm, and nothing new has developed in bleached sulphite. News of the threatened strike in Norway should serve to stiffen up prices on bleached sulphite, since most of the pulp imported into the U. S. from that country is of this character.

RAGS — The market for papermaking rags is firm. With low grades moving freely to felt paper mills and at higher prices, other grades show an advancing trend, and dealers, who claim to have but small stocks to dispose of, are constantly marking up quotations to mills and are not hesitating to refuse business at other than the full quoted figures.

PAPER STOCK — A strong tone continues to characterize old paper prices, and additional advances have been recorded in a number of grades this week. Demand from mills is fair; it is apparent that board manufacturers and other consumers are mainly buying to cover actual and immediate needs, yet orders are of ample tonnage to sustain prices and to encourage sellers to ask higher figures. Probably the strongest grade of waste paper is old folded newspapers. Indications are that board mills have loaded themselves up with orders for news board and they are actively on the lookout for supplies of old newspapers against these commitments. Flat folded news has sold at 1.30 cents a pound f.o.b. New York, and there are now a good many dealers who will not accept orders at this price basis, asking a dollar or two per ton more. No. 1 mixed paper is bringing 95 cents to $1 a hundred pounds New York, and city or common mixed paper 70 to 75 cents. Old magazines are in steady call and strong in price. About the lowest New York shippers will entertain is 2 cents a pound f.o.b. this city, and most of them will not sell at less than 2.15 to 2.25 cents for heavy No. 1 magazines. Savings are firm at between 4.25 and 4.50 cents per pound for No. 1 hard white, and 3.35 and 3.50 cents for No. 1 soft white shavings. Old kraft paper is firm at around 2.35 cents per pound New York, and ledgers and writings are quoted at 2.15 cents upward.

OLD ROPE AND BAGGING — Old manila rope is still largely neglected by paper mills. Occasional orders are coming into the market but they chiefly call for single carlots, and prices range about 5.50 cents a pound at shipping points for No. 1 domestic manila rope, with some supply probably available down to 5.25 cents.

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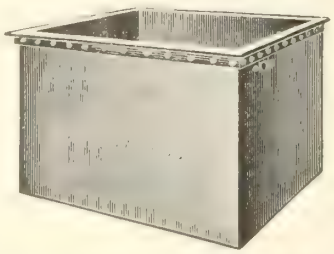
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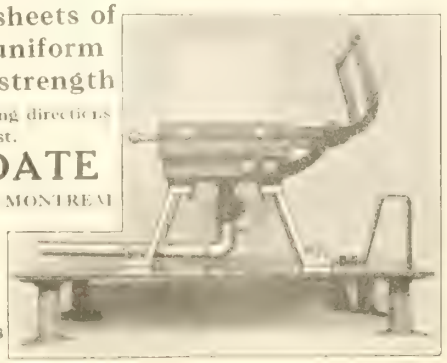
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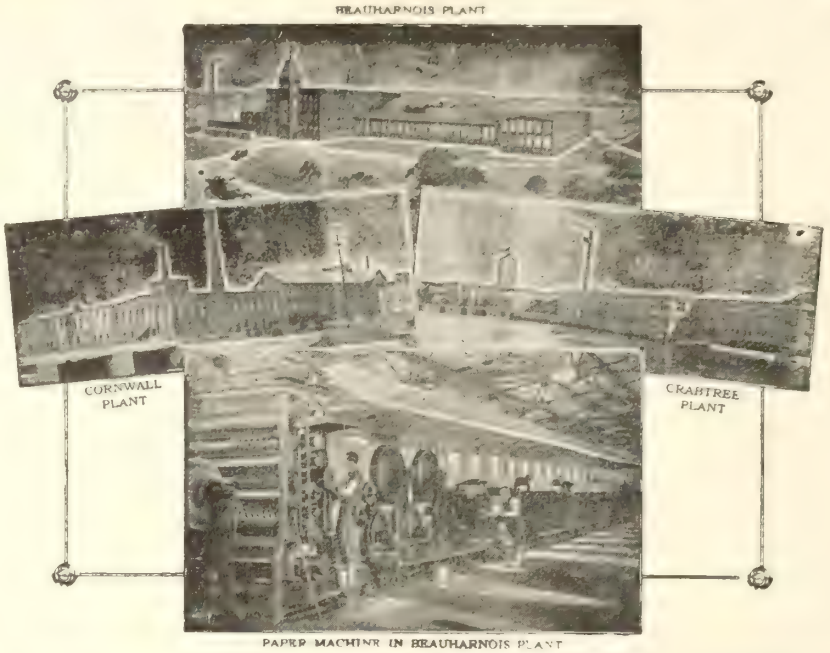
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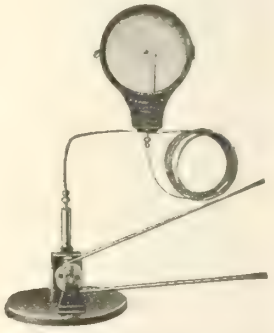
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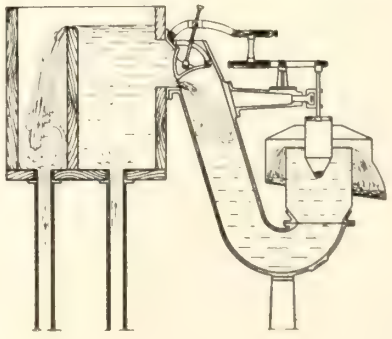
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ALPHABETICAL LIST OF ADVERTISERS

See Classified List on Page 73.

Unpaged advertisements appear in every other issue.

A

Alberene Stone Co., Ltd. .. ..
Abitibi Power & Paper Co. Ltd. .. 84
Acer, J. H. A. & Co., Ltd. 74
American Voith Contact Co., Inc. ..
American Stone Co. 24
American Woodpulp Corporation .. 24
Ayers. Limited 11

B

Babcock & Wilcox .. ..
Barrett & Co., Ltd., The .. ..
Barber, W. J. & Co., Ltd. .. ..
Bathurst Company, Ltd. 82
Bailey Meter Co., Ltd. .. ..
Bates & Innes, Ltd. 25
Bemis Manufacturing Associates ..
Bertrams, Limited .. ..
Belgo Paper Co., Ltd., The 82
Beveridge Supply Co., Ltd. .. ..
Black-Clawson Co., The 86
Bolton, John W. & Sons, Inc. 26
Boving, Hydraulic & Engineering .. Company, Ltd. .. ..
Bristol Co., The 80
Brompton Pulp & Paper Co., Ltd. .. 82
Burgess, E. T. .. ..

C

Canada Foundries & Forgnigs, Ltd. 72
Canada Metal Co., Ltd., The 28
Cameron Machine Co. 22
Canadian Combustion Co., Ltd. .. ..
Canadian Barker Co. .. ..
Canadian Des Moines Steel Co., Ltd. 87
Canadian Elixman Co., Ltd. .. ..
Canadian Equipment Co., Ltd. 30
Canadian Fairbanks-Morse Co., Ltd. 32
Canadian Ingersoll-Rand Co., Ltd. ..
Canadian Johns-Manville Co., Ltd. .
Canadian Milk Products, Ltd. .. ..
Canadian Nashua Paper Co., Ltd. ..
Canadian Paperboard Co., Ltd. 24
Canadian Pipe Co., Ltd. .. ..
Canadian Sirocco Co., Ltd. 18
Canadian SKF Co., Ltd. 1
Canadian Vegetable Parchment Co., Limited .. ..
Canadian Vickers, Ltd. 8
Canadian Westinghouse Co., Ltd. ..
Capital Wire Cloth & Mfg. Co., Ltd. 26
Carey, Jas. L. 22
Christie, George, Ltd. 80
Clayton, Neil & Jones, Ltd. 12
Combustion Engineering Corporation Limited 4
Crane, Limited .. ..
Crittsinger, Burt Co., Inc. 25
Cleveland Stone Co., The .. ..

D

Date, John 72
Dept. of Lands, Forests & Mines Ontario 13
Dodge Mfg. Co. of Canada, Ltd. ..
Dominion Belting Co., Ltd. .. .. ..
Dominion Engineering Works, Ltd.
Dominion Oxygen Co., Ltd. .. .. ..
Donnacona Paper Co., Ltd., The .. 24
Don Valley Paper Co., Ltd. The 24
Dryden Paper Co., Ltd. 24
Dunlop Tire & Rubber .. ..
Dunham, C. A. Co. .. ..

E

Elixman Paper Core Co., Inc. .. ..
Elk Fire Brick Co. of Canada, Ltd.
English China Clays, Ltd. .. ..
Engineering & Machine Works of Canada, Ltd. .. ..

F

Ferguson, H. S. 22
Ford, J. & Co. .. ..
Foundation Co., Ltd. 22

G

Galt Knife Co., Ltd. .. ..
Garden City Paper Mills, Ltd. .. ..
Geigy Co., Inc. 27
Goldie & McCulloch Co., Ltd. .. ..
Goold, Shapley & Muir Co., Ltd. .. 72
Gottesman, M. & Co 29
Grasselli Chemical Co., Ltd., The ..
Graton & Knight Mfg. Co., Ltd. ..
Gutta Percha & Rubber, Ltd. 6

H

Hamblet Machine Co. 25
Hamilton, Wm. Co. of Canada, Ltd. 89
Hamilton Gear & Machine Co. 19
Hans Renold of Canada, Ltd. 74
Hardy, George F. 22
Harland Engineering Co. of Canada, Limited .. ..
Hay Knife Co., Ltd., Peter .. .. ..
Hendrick Mfg. Co. .. ..
Hercules Powder Co. .. ..
Holliday, L. B. & Co., Ltd. .. .. ..
Huestis, A. M. .. ..
Hydraulic Machinery Co., Ltd. .. 3

I

Industrial Engineering Co., Ltd. .. 23
International Business Machines Co., Limited. 23
Interlake Tissue Mills Co., Ltd. ..

J

Jeffrey Mfg. Co. 10
Jenkins Bros., Ltd. .. ..
Jenssen Co., G. D. 23
Johnson Wire Works, Ltd., The .. 30
Jones & Glassco, Regd. .. ..

K

Kalbfleisch Corporation, The .. ..
Kander Paper Stock Co., Ltd., The 24
Kenwood Mills, Ltd. 7
Kimball, Herbert S. 23
Kingsbury Machine Works 17
Klipstein, A. & Co., Ltd. .. ..
Kuttroff, Pickhardt & Co., Inc. .. 2

L

Lacey, James D. & Co. 18
Lagerloef Trading Co. 67
Langston, Samuel M. Co. 27
Laurentide Co., Ltd. 84
Lawrence Machine Co. .. ..
Link-Belt Limited .. ..
Lombard & Co. Inc. 27

M

Management Engineering & Development Co., The 23
Mead, Patton & Co., Ltd. 23
McArthur, Irwin, Ltd. 20
McAvity, T. & Co., Ltd. .. ..
McKinnon Steel Co., Ltd. 22
Mills Works & Machinery, Ltd. .. 80
Miramichi Quarry Co., Ltd., The .. 17
Montabone, J. A. F. .. ..
Montreal Locomotive Works, Ltd. ..
Morrison, J. L. Co., The 78

N

National Paper Stock Co., The 24
Niagara Wire Weaving Co., Ltd. The .. 74
Northern Crane Works, Ltd. 27
Northern Electric Co., Ltd. 5
Northern Foundry & Machine Co. .. 12
Norwood Engineering Co. of Canada, Limited 26

O

Oliver Continuous Filter Co. .. ..
Ontario Wind Engine & Pump Co., Limited .. ..

P

Pacific Coast Pipe Co., Ltd. 30
Peacock Brothers, Ltd. 19
Penmans Limited 20
Port Arthur Shipbuilding Co., Ltd. 29
Porritts & Spencer Co., Ltd. 74
Price Bros. & Co., Ltd. .. ..
Price & Pierce, Ltd. 82
Provincial Paper Mills, Ltd. 76
Pusey & Jones Co., The .. ..
Pulp & Paper Mill Accessories, Ltd. 85
Pulp & Paper Trading Co. 28

Q

Quarries, C. & M. Co. 72

R

Reed, Geo. W. & Co., Ltd. .. ..
Relph, Darwen & Pearce 86
Rolland Paper Co., Ltd. 86
Ross Engineering of Canada Ltd. .. 27
Russell Brothers 26

S

Sadler & Haworth 2
Sewall, Jas. W. 22
Sherbrooke Machinery Co. 9
Smallwood Stone Co., The 24
Smallwood Low Stone Co., The .. 27
Smith Howard Paper Mills, Ltd. .. 78
Spanish River Pulp & Paper Mills, Limited 86
Steel Trough & Machine Co., Ltd. . 72
St. Maurice Paper Co., Ltd. .. .. ..
Sturtevant Co. of aCnada, Ltd. 22
Swenson Evaporator Co. 17

T

Tallman, Brass & Metal Ltd. .. ..
Taylor, J. A. .. ..
Taylor, H. S., Ltd. 23
Texas Gulf Sulphur Co. 32
Ticonderoga Machine Works .. ..
Tippett & Co., Ltd. 28
Tyler, W. S. & Co., The 27
Trimbey Machine Works .. ..

U

Underfeed Stoker Co. of Can., Ltd.
Union Screen Plate Co. of Canada, Limited 87
Union Sulphur Co., The 30
United Wire Works, Ltd. 28

V

Vera Chemical Co. of Canada, Ltd. 72
Voorhees Rubber Mfg. Co. of Canada, Limited 16

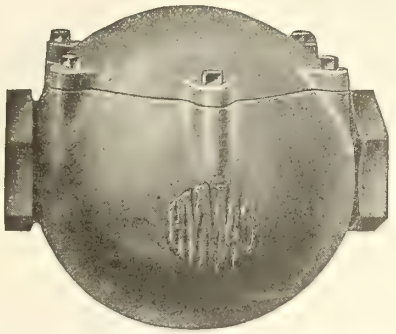
W

Wallace, John H. W. & Co., Ltd. .. 22
Wardlaw, T. D. & Son 27
Walmsley, Charles & Co. Ltd. 14-15
Warren, Kenneth L. 22
Warwick Woollen Mills, Ltd. 28
Watford Engineering Works, Ltd.
Waterous Engine Works 90
Wayagamack Pulp and Paper Co., Limited .. ..
Weir, G. & J. (Canada), Ltd. 19
Westbye, P. P. .. ..
White, W. H. 22
Whyte, William 23
Wilson Patterson Co. 72

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PIPE LINE FILTER

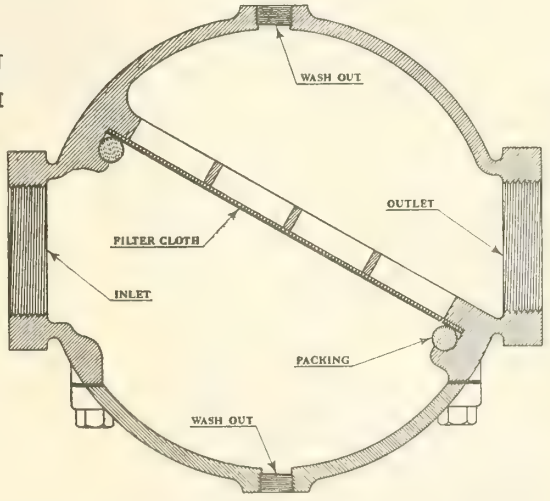
SIMPLE
POSITIVE
RELIABLE
STANDARD PIPE
THREADED
CONNECTIONS



STANDARD SIZES
TWO INCH
THREE INCH
THREE AND ONE HALF INCH
FOUR INCH

DESIGNED TO CATCH FOREIGN MATTER IN WATER OR OTHER FLUID FLOWING THROUGH PIPE LINES

TO INSPECT OR CLEAN OUT REMOVE BOTTOM COVER
MESH OR FILTER CLOTH TO SUIT REQUIREMENTS
PARTS ALL INTERCHANGEABLE
CAST IRON THROUGHOUT



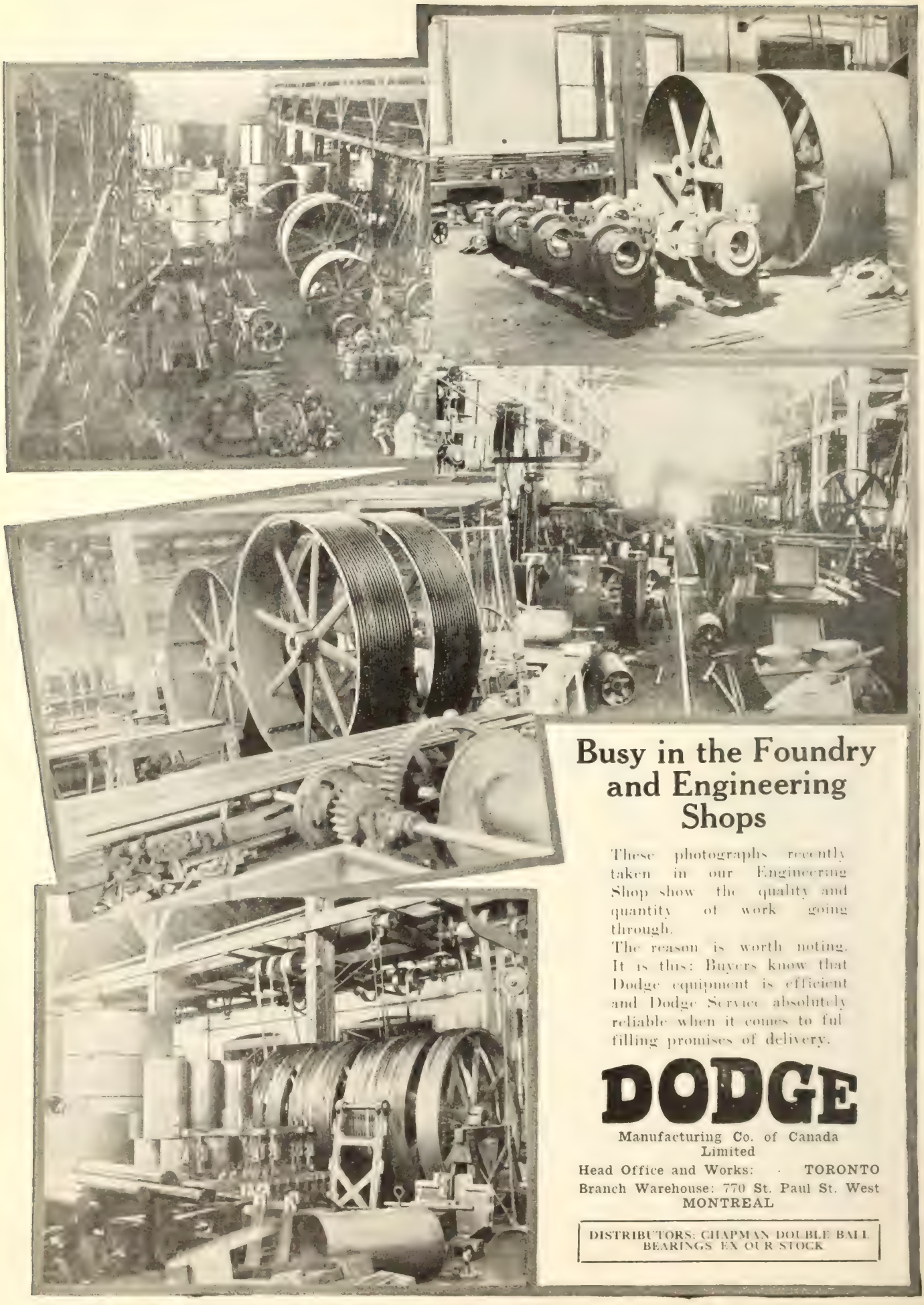
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FILTERING SURFACE APPROXIMATELY SEVEN TIMES PIPE INLET AREA
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LIMITED

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The reason is worth noting. It is this: Buyers know that Dodge equipment is efficient and Dodge Service absolutely reliable when it comes to fulfilling promises of delivery.

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Manufacturing Co. of Canada Limited

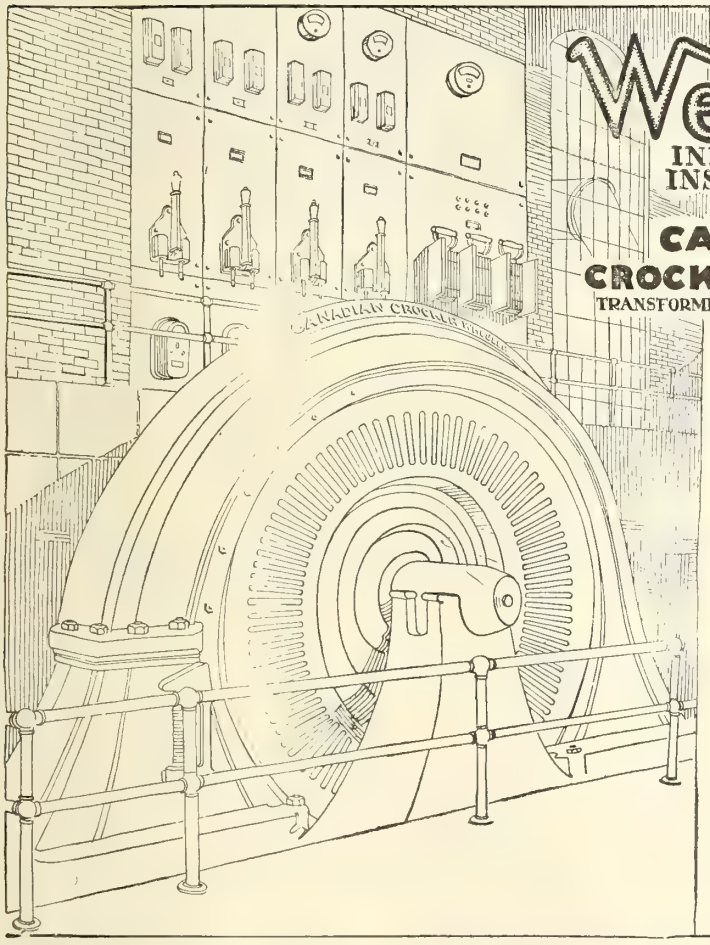
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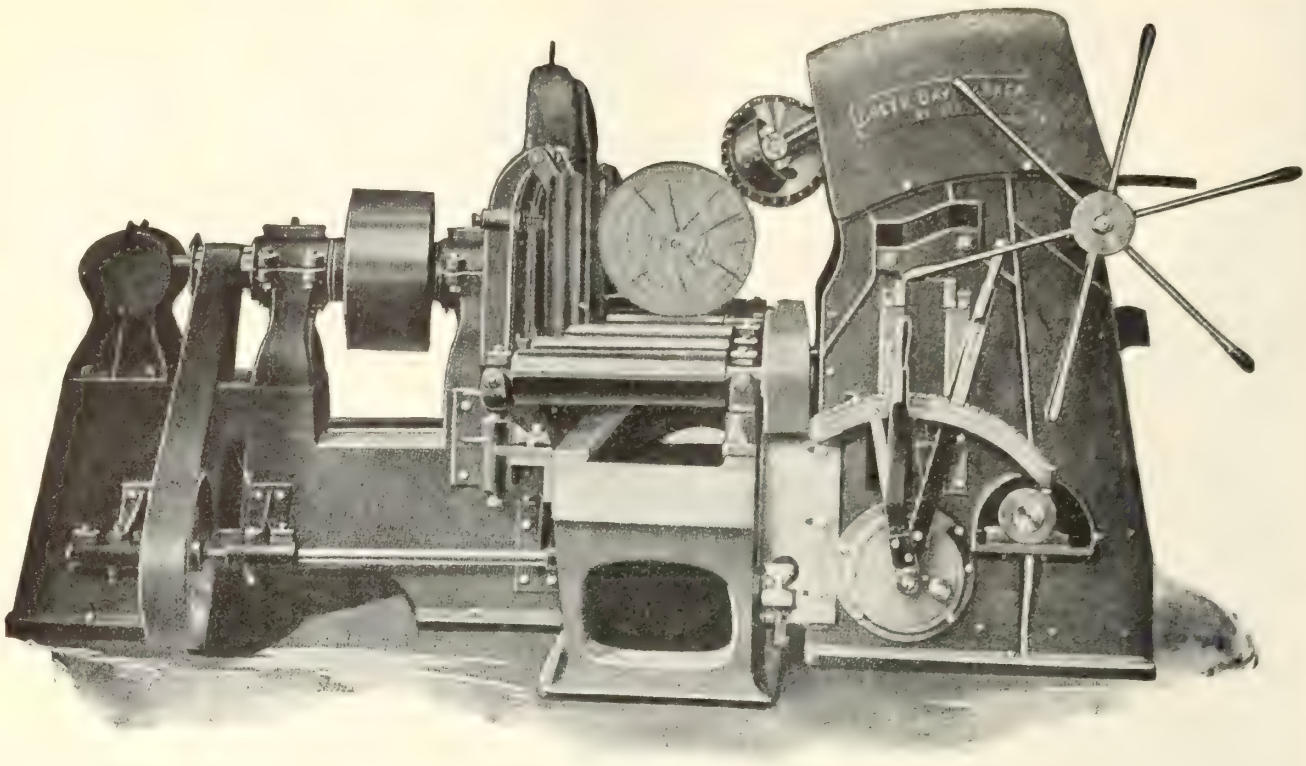
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HALIFAX HAMILTON WINNIPEG EDMONTON
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Construction Material
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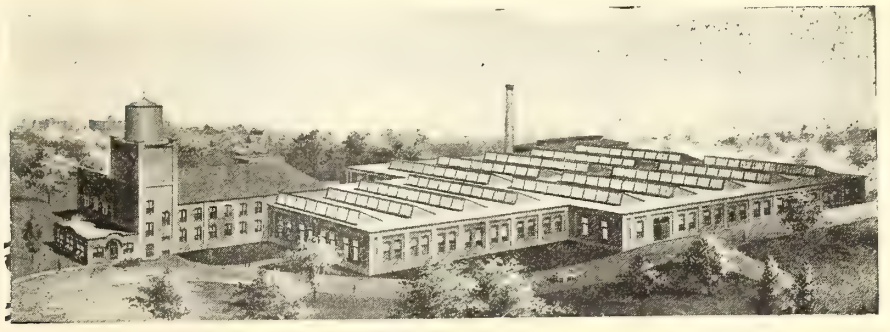
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BARKERS that have stood the test of time—both normal and abnormal. **Higher** prices will be obtained in normal times for paper manufactured from wood barked on rotary knife barkers. **Equip** your mill to take care of normal business conditions.

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CANADIAN BARKER CO.

SAULT STE. MARIE, ONTARIO



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KENWOOD FELTS AND KENWOOD TAN JACKETS

are valuable aids toward such a saving.

Removal of Water--Freedom from Trouble--Length of Life--are three important characteristics of Kenwood Felts.

KENWOOD MILLS LTD.,

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KENWOOD FELTS--KENWOOD SEAMLESS FELTS--KENWOOD TAN JACKETS

Vickers' Piccard Pictet Speed Governor

— FOR —

Water Turbines



This Governor embodies the experience of more than half a century. The essential features may be briefly summarized as follows: —

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2. STEADINESS — Owing to the features of design mentioned above, there is entire freedom from oscillation of the gates or deflector, and therefore, of racing during normal running, and the tachometric record shows only one wave after sudden change of load. This feature prevents unnecessary wear and deterioration of the moving parts caused by continuous movement of the servo-motor, and also prevents velocity oscillation in the feed pipe to the turbine.

3. OIL SUPPLY — In both large and small installations where the variation of the load may be considerable, the pressure oil supply must be sufficient. In all our governors we allow for an oil pump of ample size so as to maintain a constant pressure and full supply of oil to meet all demands. This pump is rotary with 6 or 8 cylinders. All parts move in oil, and there are no valves, no gearing, no cocks and no links; the pump runs without noise or vibration.

4. HAND AND REMOTE CONTROL — The hand control gear with this governor is so arranged as to be entirely independent of the oil pressure system. Should it be necessary to stop or dismantle any portion of the governor the speed can be maintained at a high standard of regularity by means of the hand control gear. When required, remote control gear, operated electrically from the switch-board, is embodied.

5. SIMPLICITY OF CONTROL AND SAFETY DEVICES — All the controls are concentrated on one part of the governor and are of great simplicity. The governor as designed is intended to avoid any runaway. Special devices can also be added which will shut down the turbine in case of breakage of the belt drive to the governor fly-balls.

Write for Catalogues 101 and 105.

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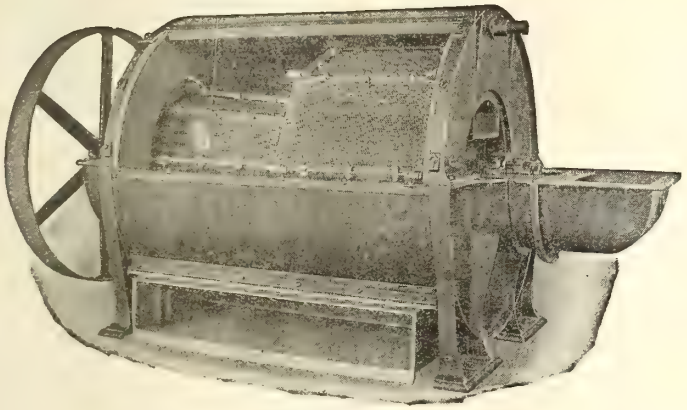
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MODERN CLOSED SYSTEM

No Pulp Lost Except Rejection at Bull Screen

Knotter, Knot Screen or Sliver Screen

FIRST SCREENING

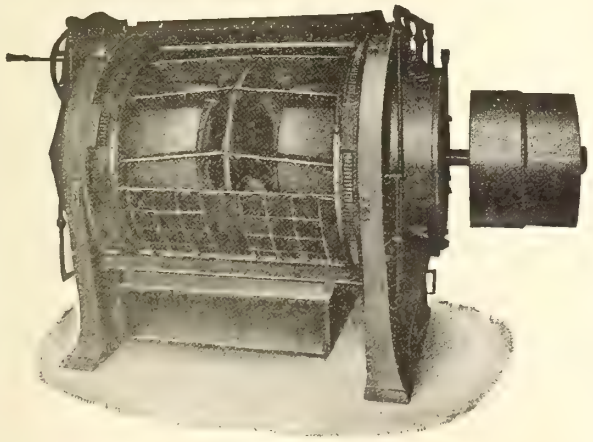


"IMPCO" KNOTTER

For sulphite, sulphate, soda, kraft or groundwood. Capacity up to 50 tons less than 1 H.P. per machine, single belt drive, no gears or sprockets, no packings, slow speed, quick detachable plates. The standard machine for removing knots, shives and foreign matter.

Centrifugal Screen

FINE SCREENING



"IMPCO" SCREEN

For fine screening of sulphite, sulphate, soda, kraft or groundwood pulp. Highest quality of stock produced at minimum power: Revolving screen plates; mechanically correct.

INVESTIGATION SOLICITED

SHERBROOKE MACHINERY CO., Ltd.

SHERBROOKE - QUEBEC

Burn All your Coal Efficiently



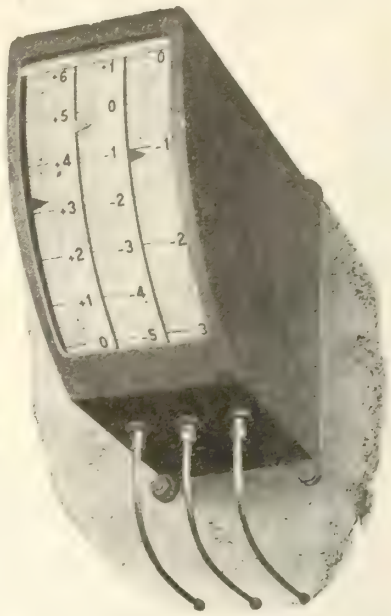
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To meet this demand we have developed

Another check on your boiler plant

The

Bailey Multi-Pointer Gauge

A sensitive and highly accurate indicating gauge that shows fire box draft and differential draft readings. It can also be extended to indicate accurate records of practically every factor in the operation of the power house.



The Bailey Meter For Coal-

This gives a reliable check upon the amount of coal delivered to individual boilers. The accuracy of this meter will surprise many who look upon it merely as a rough indication of the amount of coal passing through the spout. As a matter of fact it gives results within one to three per cent. at all times. No external power is required.

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THE BROWN PAPER MILL COMPANY
WEST MONROE, LOUISIANA,

THE FASTEST AND WIDEST "KRAFT"
PAPER MAKING MACHINE IN THE WORLD.

IT WILL PRODUCE A SHEET OF SUPER KRAFT PAPER 170 inches WIDE AT A MAXIMUM SPEED OF 1000 FEET PER MINUTE - WITH A POSSIBLE DAILY PRODUCTION OF OVER 65 TONS.

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WILMINGTON, DELAWARE.

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Pioneers and leading the field, in Canada, in the manufacture of

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Largest Plant of the kind in the Dominion, ranking amongst the most modern FELT FACTORIES in the World.

Capacity easily taking care of very important Canadian customers' requirements — and shipments to the other Paper Making Countries.

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"FELTS
WASHED
WITHOUT
SHUTTING DOWN
PAPER MACHINES"

The Patented "Ayers" FELT WASHER attains this ideal for which paper makers have long been striving. By the means of this device, the work of cleaning and washing the Felts is done without stoppage of the machinery and, in the case of news print or similar paper, without breaking or crushing the sheet.

PATENTED IN U. S. A., CANADA AND EUROPEAN COUNTRIES
PATENTS APPLIED FOR IN JAPAN AND MEXICO

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Privilege to install this FELT WASHER readily granted by AYERS LIMITED to all its customers on most reasonable terms.

Full particulars given upon application

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These two essential factors — "AYERS FELTS and FELT "WASHER" — in perfect team work — make for efficiency, economy and genuine satisfaction in the Paper Mill.

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High Cost Wastage

We can positively show you

How you can conserve and cut steam costs that will startle you.

We apply common sense methods to Boiler Rooms and Steam Plants of all kinds.

Let us show you how it can be done.

Our Systems are unique.

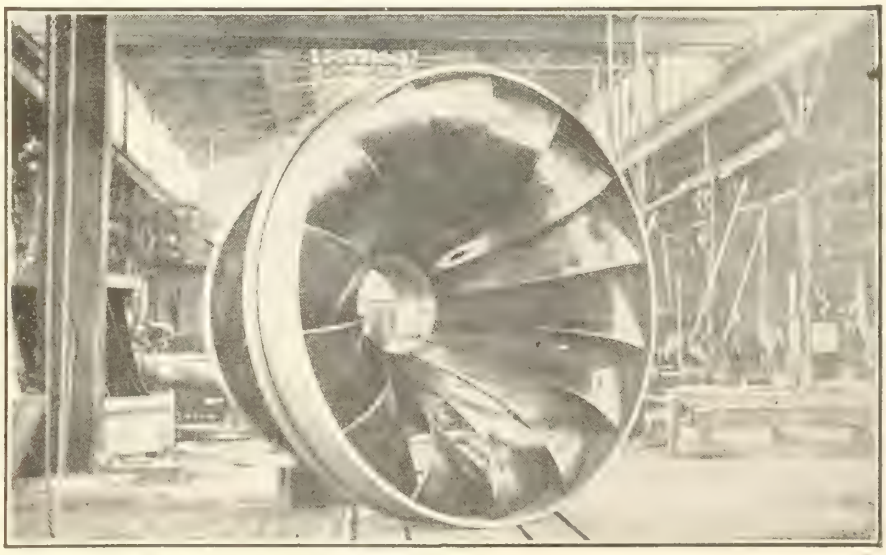
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HYDRAULIC TURBINES of

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Modern Designs
Highest Efficiency
Substantial Construction
Continuous Service

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Our Hydraulic Turbines ensure a sound investment.

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Charles Walmsley & Co. (Canada) Limited

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Walmsley Complete Paper Mill Equipment

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(CANADA)



Wet End of 232 in. Fourdrinier Machine at Abitibi Power & Paper Co., Iroquois Falls, Ont.,
Which has given an output as large as 90 tons in 24 hours.

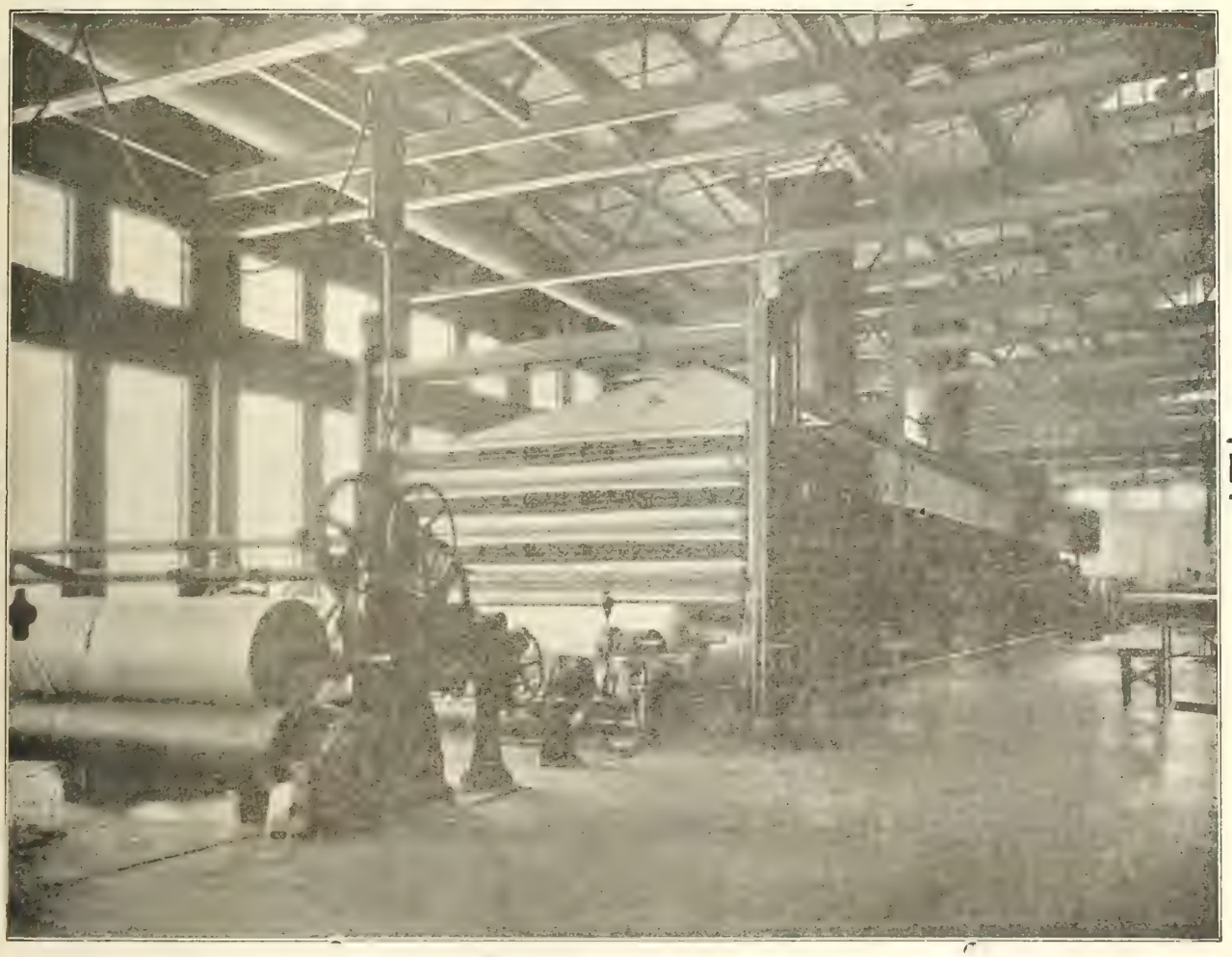
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Calenders, Reels, and Winder, on the Widest Machine in the World. There are two of these monsters at Iroquois Falls, Ont.

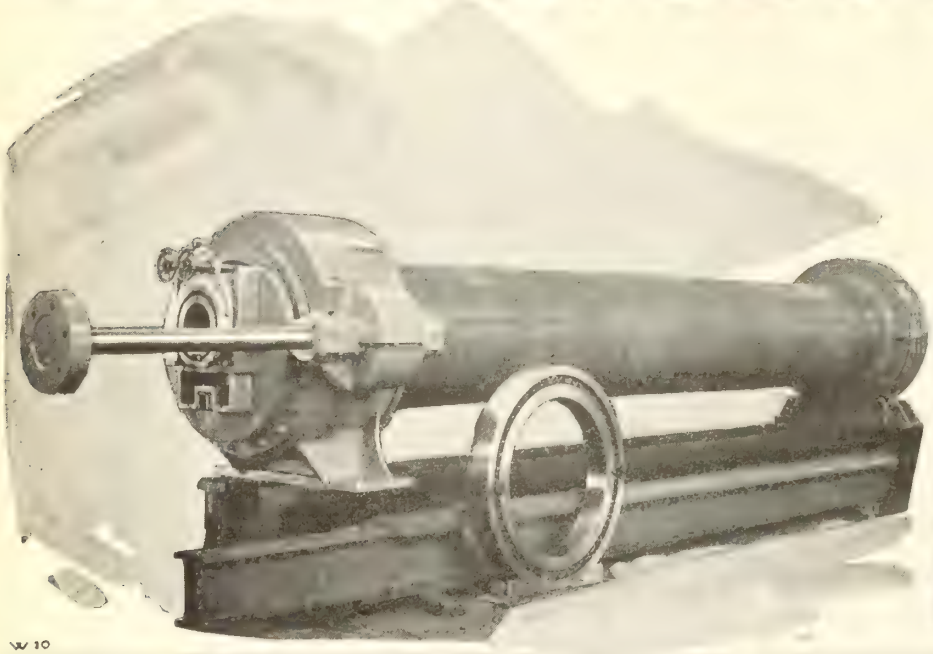
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Saves expense of Couch Jackets.

Saves wire cost through reducing flat box friction.

Prevents frequent Breaks.

It can be adapted to any machine!

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YOU CAN NOW SECURE THE ELIXMAN CORES

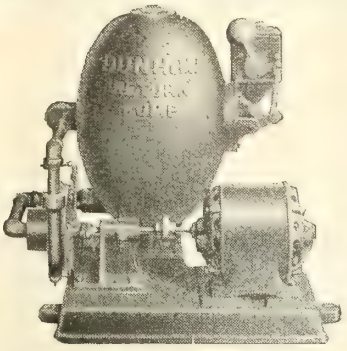
(with or without the patented steel caps)
at Hamilton, Ontario



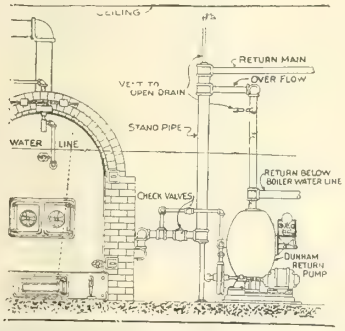
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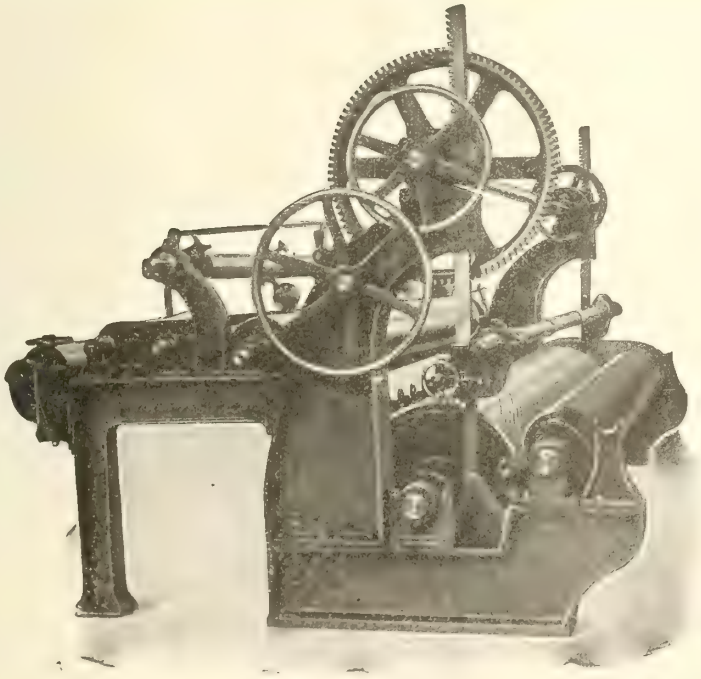
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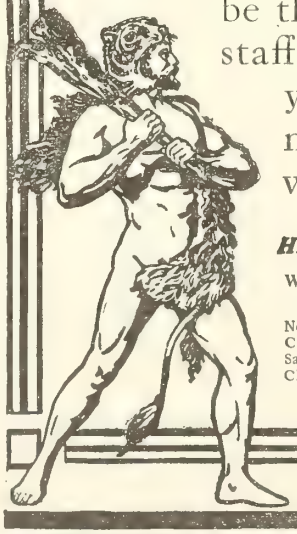
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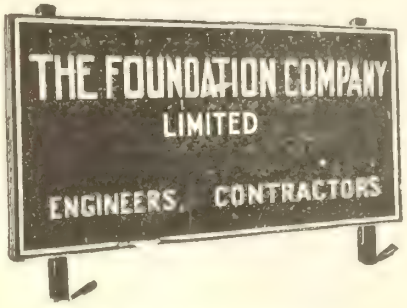
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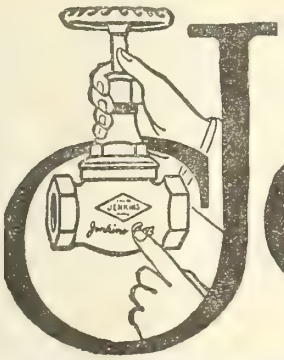
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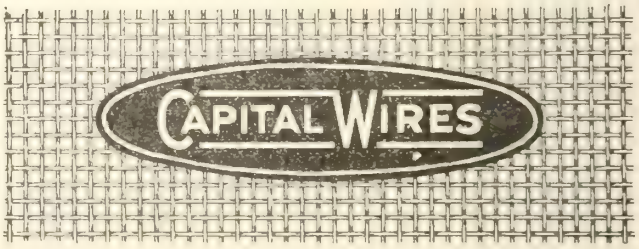
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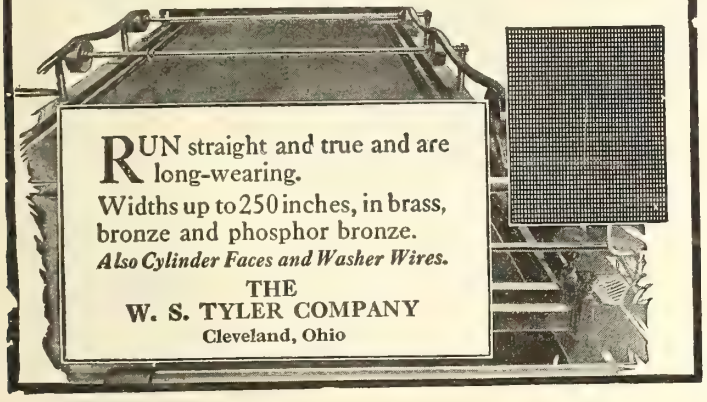
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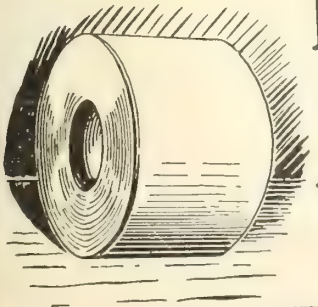


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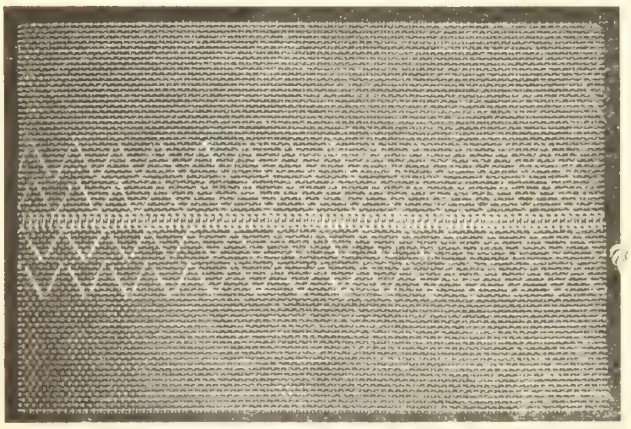
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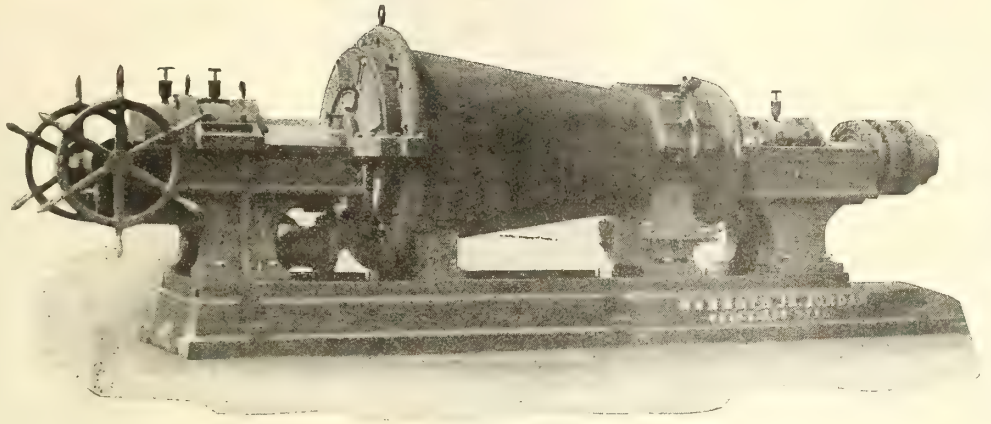
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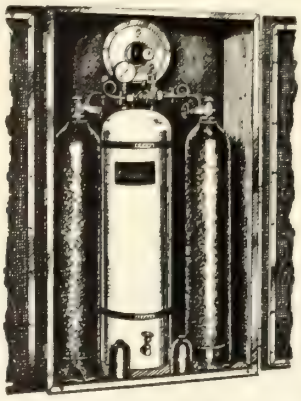
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Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XXI. GARDENVALE, QUE., August 23rd, 1923 No. 33

TABLE OF CONTENTS

EDITORIAL

The pulpwood commission 835
They missed the bus 835
Ford Coal Conversion plant 836

Special Articles

Training technical men for the paper industry 837
Steam accumulators 841
American pulpwoods 843

News of the Industry

Australia making paper 836
Newfoundland project progressing 840
Western Canada pulp mill in bank difficulty 842
Commission to inquire into forest wealth . . 846
The personnel of the commission 846
Forestry conference moves west 847
British trade news 850
Pulp and Paper news 851
Farm property value in N.S. 852
New Brunswick news 852
United States notes 853
Bathurst mill operating 854
Regrets 854

Miscellaneous Information

Review of recent literature 848
Pulp and paper census — 1922 858
"The Exporters' Encyclopaedia" 858

The Markets

Canadian trade conditions 855
New York markets 856

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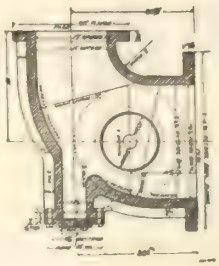
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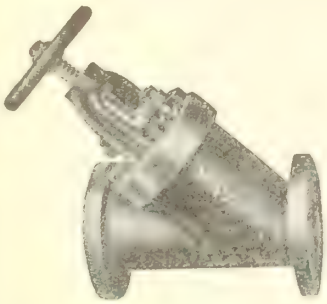
The editor cordially invites readers to submit articles of practical interest which, on publication, will be paid for.

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47

EDITORIAL

THE PULPWOOD COMMISSION

A royal commission has been appointed to investigate the situation in Canada with regard to supply of pulpwood and the need for further restrictions on its export in the unmanufactured state. On the Commission, the appointments to which are given on another page, we find a manufacturer, two lawyers, a lumberman and a contractor; the secretary is an official of the Federal Government, Acting Director of the Forestry Branch. Except for the secretary, none of the appointees are known to the Pulp & Paper Magazine, due no doubt to our limited acquaintance of only seven years with the industry. Perhaps the Government wants men entirely outside the industry in order to get perfectly unbiased opinions. But why go so far afield for men who may have no great concern for or interest in forest conservation, and who are probably unfamiliar with forestry growth statistics and the need of wood using industries, when there are in federal and provincial service, men who know the situation already as far as data are available. In their hands the order to the commission to get information would result in the up-to-date inventory of our forest resources that has long been sadly lacking, and they would get it quickly, with a minimum of expense.

Why spend $5,000 a month for getting information the Government should have, or should get from its own services, whose staffs could easily and properly be increased to do the work quickly and comprehensively. The commissioners are allowed $25 (chairman, $35) with $15 for expenses, per day, in addition to railway fare. Now $12,000 to $15,000 a year is a very comfortable income. We hope the secretary of the commission gets a return commensurate with his services which we imagine will be the bulk of the work done.

Is there any politics involved in the appointment? Are the commissioners all disinterested or uninterestible in what concerns exporters of pulpwood? Who knows? Are the commissioners the best men available for this important work? We think not. But they may take hold of the work conscientiously and energetically and make a good job of it. And they may become enthusiastic advocates of forest conservation.

In our humble opinion, the organization of this business is wrong. The men on the Commission cannot possibly do the work entrusted to them; they lack experience, and they have not the necessary funds available for getting it done. Even in the hands of forest engineers, it would take three years to get the accurate inventory that should result from an investigation dignified by the appointment of a Royal Commission to carry it out, and the Commission would have been big enough had there been but a chairman versed in forest technology, with a statistical secretary and an appropriation for aerial and ground surveys and mapping.

We fear the Government has lost a chance to do something really worth while for Canada; a forest inventory has been a crying need for years. The Commission was appointed ostensibly in the interests of Canada's wood using industries. The most important of them all is the Pulp and Paper Industry, but, as far as we can find out, the Association which represents this industry was not consulted as to appointments to the Commission nor to the work to be done and the general method of doing it.

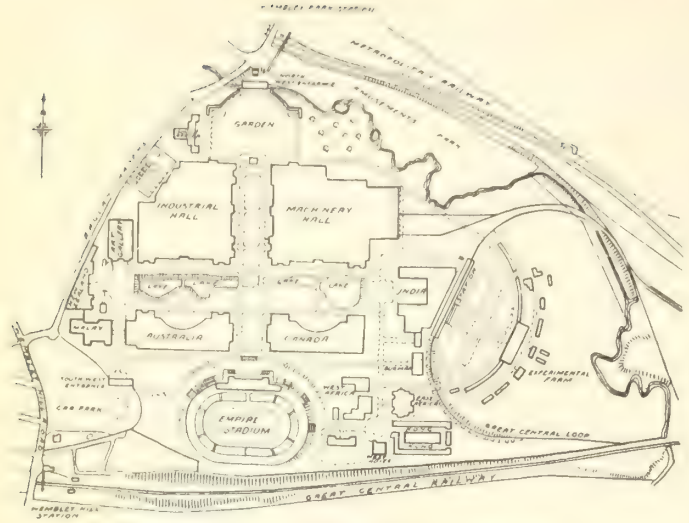
One thing is sure, an accurate inventory of our wood supply will justify the expense, even if it costs $100,000. Let the Commission get to work and here's to their success.

THEY MISSED THE BUS

Glowing reports are received in Canada of the success of the Canadian Exhibition train which is at present touring France. A number of concerns connected with the pulp and paper industry who have their goods on exhibit in the train have already received a number of inquiries which may lead to future business in spite of the fact that France is about as near a closed shop in the way of papers as could be imagined. As one report recently stated, the Canadian train would have been an even greater success had it not been for the fact that several hundred exhibitors "missed the Bus," and even at the last minute, there were a number of firms accommodated in a hurry, who might have been represented by well thought out and well prepared exhibits had they given the matter thought in sufficient time.

Great as was the opportunity for Canadian firms to show their goods by participating in the Exhibition train in France, the British Empire Exhibition is an event of even greater importance, which should be participated in, not only on the basis of possible trade, but perhaps even more so in the case of pulp and paper on the basis of pride in the Dominion and pride in our industry.

The Canadian Exhibition Commission, under the able directorship of Mr. J. S. McKinnon, has charge of the



General Plan of Exhibition Grounds

industrial exhibit, and has been as generous as possible in the allotment of space to the Canadian Pulp and Paper Industry. Even so, there is probably not as much space available as will be in demand for the showing of Canadian products. It would not be surprising if three or four companies would ask for at least a tenth of the total space available. Don't miss the Bus!

The Canadian Pulp and Paper Association executive have shown their interest and confidence in the value of this Exhibition by engaging and underwriting the rental of all the space which the Commission could release for the pulp and paper exhibit. They have appointed a director for the exhibit whose time is given, free of charge, but whose expenses and the expenses connected with the assembling of the exhibit and necessary attendance at the booth will be apportioned among those who avail themselves of this unparalleled opportunity for showing Canadian-made pulp, paper and fiber goods in this great window display of the Empire.

The space and the opportunity are by no means restricted to members of the Association, nor even to manufacturers of paper. Any concern making or converting pulp or paper into a commercial article in Canada is invited to participate in the exhibit. A number of inquiries of this character have already been received.

If you are proud of your product, you can show your faith in it by taking part in this British Empire Exhibition. Further particulars will be furnished by the Director of Pulp and Paper Exhibits, Gardenvale, Quebec.

Don't miss the Bus!

Got your coal? Then get it!

The man with a definite object in view has got it all over the man who has none.

FORD COAL CONVERSION PLANT

It is announced that Henry Ford will soon have in operation, at Ford, Ontario, a plant which will demonstrate a new process for the utilization of coal whereby there will be available a supply of gasoline for operating Ford and other motor cars. The idea is to distil the coal at a low temperature whereby the quantity and value of the by-products are increased. It is stated that the quantity of motor fuel is increased from 4½ gallons per ton of coal by the ordinary high temperature process of distillation to 12 gallons and that the product is a true gasoline, when the unsaturated hydrocarbons are converted into the petroleum type. It is cheering to hear that the cost of gasoline, by this process, will be reduced.

It is stated that the economically recoverable products of the distillation are as follows: coke, coal gas (4,000 cubic feet per ton of coal) sulphate of ammonia, creosote, gasoline and kerosene, and lubricating oils and greases.

The operation of this plant will be watched with interest by pulp and paper mills; first because it is proposed to crush the friable coke and form it into briquettes, using evaporated waste sulphite liquor as a binder, and second, because the initial plant will handle 400 tons of coal daily, and this quantity is exceeded by a number of Canadian pulp and paper plants.

There are a number of interesting possibilities which the Ford experiments will suggest to pulp and paper men: it may result in a profitable market for the disposal of waste sulphite liquors, and it may help materially to solve the domestic fuel problem of some Canadian localities.

AUSTRALIA MAKING PAPER

Reports reaching here from Australia state that the Australasian Paper and Pulp Co., Ltd., of Geelong, Vic., has recently turned out some excellent paper made from pulp consisting of 65 per cent of the products of New South Wales black-butt, 25 per cent imported pulp, and 10 per cent waste paper. On this paper was printed the annual report of the New South Wales Forestry Commission. The report states that at the Forest Products Laboratory in Perth, W. A. it has been found that black-butt, mountain gum, spotted gum, and coast ash all make good and strong papers, that from black-butt being the best. It yields 75 per cent more pulp per digester than the commonest foreign pulpwood. Exceptionally strong light-weight paper, which is suitable for writing, envelope, typing, book, magazine, and similar higher grade printings, can be made from black-butt. The Commission recommends that semi-commercial scale tests be made to produce pulp in ton lots for conversion into paper on full-sized paper machines, and adds that the above facts are interesting, in view of enquiries recently made in Sydney by a British -Swedish group on the question of erecting mills for the manufacture of paper from Australian wood pulp.

Training Technical Men For The Paper Industry

By C. E. LIBBY,

Professor of Pulp and Paper Manufacture, The New York State College of Forestry, Syracuse, N. Y.

A few years ago a committee representing one of the Organizations of the American Paper and Pulp Association made a survey of the paper industry in order to determine its requirements for technically trained men. After a careful study of the situation it was the opinion of this committee that the paper and allied industries could profitably assimilate between fifteen hundred and two thousand college trained men each year.

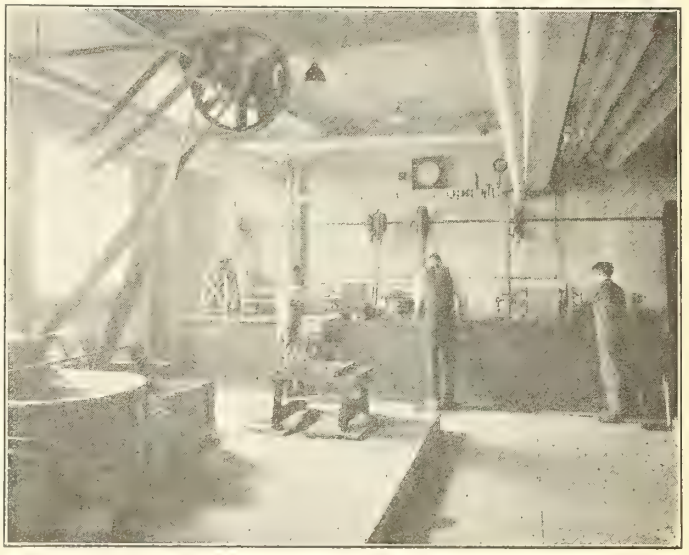
Notwithstanding the apparent opportunities in this field for technical men, American Universities have been slow to introduce into their curricula the specialized courses necessary for training men specifically for this industry. The failure to establish such courses in the past has very probably been due to the reluctance of the colleges to depart from curricula designed to educate broadly, enabling graduates to choose a vocation in almost any field of activity. The demand of the industries for specialists has gradually brought about a modification of this idea and many institutions of collegiate grade are now training men for individual industries. The paper industry has been one of the last to profit by this educational development for it was not until 1913 that any American University offered organized instruction in this field. Even at the present time there are but two well established courses in the United States and Canada although plans for others are being formulated.

Instruction in paper making was first given at the New York State College of Forestry in 1918. The course was organized to give regularly enrolled Forestry students elementary instruction in the important field of forest utilization embraced by the paper industry. Opportunities for employment in this industry were so numerous that many students, educated primarily as Foresters, were soon filling permanent positions in pulp or paper mills despite the fact that their training had not been designed to fit them for this work. To meet this situation, in the fall of 1920 the pulp and paper courses of the college were reorganized with the object of training interested students specifically for the pulp and paper industry.

The New York State College of Forestry is possessed of an ideal location for a school of papermaking. Not only is New York State the leading state in the number of its pulp and paper establishments, but also in the number of people engaged in the industry and in the production and value of its manufactured products. These factors assure the college of active co-operation on the part of the industry in furnishing to its students opportunities for plant experience and in placing its graduates. Within a radius of thirty-five miles of the college are located more than a score of pulp and paper mills while the Black River district, famous for its pulp and paper establishments, is easily accessible. These mills offer exceptional opportunities to students for trips of inspection and plant operating experience. The convenience of its location makes it possible to develop a keen professional spirit among the students of the college since prominent men in the industry frequently visit it, acting as special lecturers on particular phases of the work, and since students may readily attend the conventions of the industry in New York City or elsewhere in the State at small expense.

Laboratories and Equipment

The New York State College of Forestry as its name implies is a state institution, its building having been erected in 1917 on the campus of Syracuse University,



EXPERIMENTAL PULP MILL

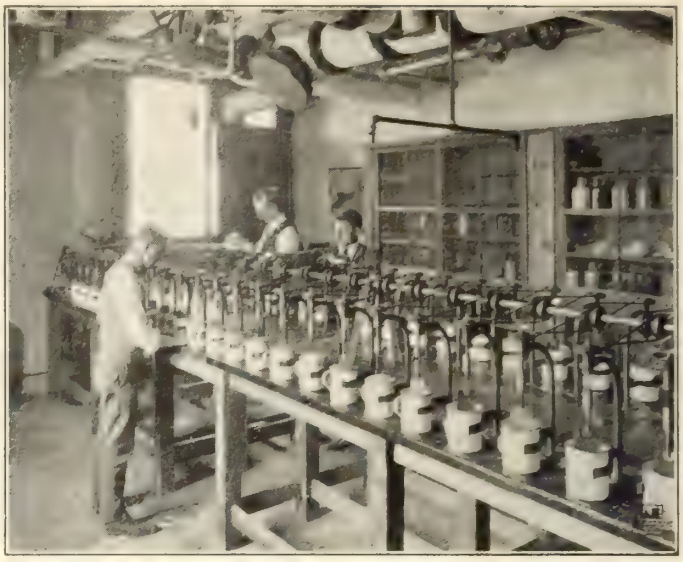
This Equipment Reduces Wood to Pulp by any one of the Chemical Pulp Processes

at a cost of $250,000. This plant represents the largest and best equipped forestry school in America. The pulp and paper laboratories are located in the basement of the building and occupy approximately 5,000 square feet of floor space. These laboratories consist of a general chemical laboratory, semi-commercial pulp and paper laboratory, paper testing laboratory, color laboratory, and research laboratory. A desirable feature of the organization of the college is its arrangement with Syracuse University whereby all elementary courses such as general chemistry, qualitative and quantitative analysis, etc. are given in the laboratories of the University. This arrangement enables the college to devote its own laboratories exclusively to the specialized work of its departments, giving instruction only to advanced and graduate students. The pulp and paper laboratories of the college are well equipped with approved testing devices and semi-commercial equipment. The experimental pulp mill includes a Mitscherlich sulphite digester, a rotary soda and sulphate digester, diaphram screen, stock vats, and a rotary steam dryer. The semi-commercial paper mill includes a 15 pound Jones beater equipped with a drum washer, a Noble and Wood Jordan engine, Gould centrifugal pump, Rice Barton and Fales wet machine, Harmon diaphragm screen, sheet machine and hand moulds. The paper testing laboratory has a complete equipment of the Schopper physical testing instruments, together with the common



GENERAL CHEMICAL LABORATORY

Devoted to a Study of the Chemistry of Forest Products, Cellulose, and Pulp and Paper Making Processes



COLOR LABORATORY

The Technique of Selecting Dyes for Coloring Paper is acquired by Students in this Laboratory

domestic physical and chemical apparatus for measuring physical strengths, determining fibre compositions and making chemical analyses. The color laboratory is equipped for determining dyestuff strengths, matching shades, or preparing formulas for colored specialties. Several of the large dyestuff manufacturers assisted in organizing the work of this laboratory by presenting to the college complete samples of their dyestuffs that are used in coloring paper.

Library Facilities

The Library of the college contains approximately 5,000 volumes and 10,000 pamphlets dealing exclusively with the various phases of forestry and among which may be found most publications pertaining to the pulp and paper industry. The Syracuse University library contains 135,000 volumes and 65,000 pamphlets comprising collections of books on the sciences, history, economics, languages and engineering. In the Syracuse Public Library there are 165,000 volumes, and many additional thousands of pamphlets and current periodicals. These combined library resources are at the disposal of pulp and paper students thereby affording excellent reference facilities and a proper background for research.

Plan and Scope of the Curriculum

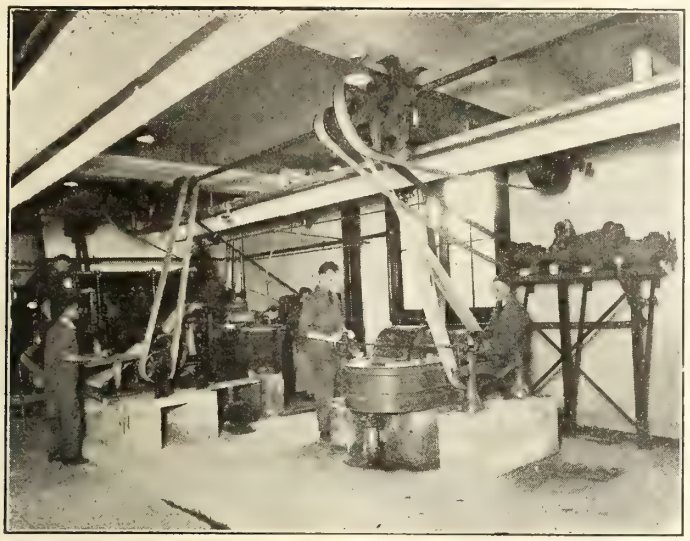
The development of a pulp and paper curriculum at a school of forestry represents a departure in technical education in this country. Heretofore all courses of this nature have been developed in connection with the departments of chemical engineering colleges. There appears to be no reason, however, why a course should not be based upon the curriculum of a professional forestry course especially if the forestry school is so located that the necessary accessory courses in chemistry and engineering can be obtained readily. In many ways the forestry curriculum provides the most logical foundation for this course.

For many years the principal raw material for paper manufacture in this country has been obtained from the forests. More than 75 per cent of the total production of paper in the United States at the present time consists of wood pulp papers, or papers which contain this material as the predominating fiber constituent. Since the production of paper in the United States is approximately 7,000,000 tons annually, there is an enormous drain on our forests to supply the necessary raw material. The present rate of consumption of certain kinds of timber like spruce is so great that they will almost disappear as commercial species within the next twenty-five years. This situation does not mean that wood pulp will soon disappear as a raw material for papermaking, but rather that forest species more difficult to utilize and now considered unfit for pulping will gradually come into use. Fractions of the industry will probably be able to continue with their present raw materials if they adopt scientific measures in reproducing and utilizing their forests.

Since wood pulp is likely to remain a raw material of major importance in the manufacture of paper, it is desirable that the education of a technical man for this industry should include a general knowledge of conservation and forest economics, and a fundamental technical knowledge of the principal raw materials of the industry. A man with this training, coupled with experience in the technical processes of the industry, should have a clearer vision in meeting future readjustments of processes and materials used in papermaking than the man who possesses only a knowledge of the processes themselves.

The pulp and paper curriculum of the College of Forestry is projected with this idea of giving the student a fundamental knowledge of the economic aspects and technical features of his raw materials. Experience indicates that in order to accomplish this not less than 20 per cent of the work of the course must be devoted to a study of elementary forestry, botany, wood technology, cellulose and fiber chemistry.

While the manufacture of pulp and paper cannot be considered a chemical industry, so many of the operations involve chemical processes that the training of a paper technologist would be incomplete without a thorough knowledge of this science. Approximately 20 per cent of the work of the pulp and paper curriculum consists of courses in pure chemistry while fully 50 per



SEMI-COMMERCIAL PAPER LABORATORY

Training Students of the Four Year Pulp and Paper Course to Operate a Modern Paper Mill



PAPER TESTING LABORATORY

Revealing the Physical, Chemical, and Microscopical Properties of Paper

cent of the 29 credit hours devoted to pulp and paper manufacture consist of technological chemistry applied to the specific processes of the paper industry.

The engineering problems associated with the manufacture of pulp and paper are perhaps more varied and extensive than those of the average big industry. A technical man in the mill should have a good elementary knowledge of electrical and mechanical engineering especially with relation to power plant problems. This work is presented in the college curriculum during the Senior Year. Preparatory courses in mathematics, physics and mechanical drawing precede the courses in electrical and mechanical engineering. Altogether these courses account for another 20 per cent of the total work of the four year program.

Society has a right to expect of the college man a certain degree of culture, no matter how technical may have been his education. His value to the community depends not only upon his technical ability, but upon his understanding of human relationships, the exercise of his rights and duties as a citizen, and an appreciation of the arts. It is hardly possible for a professional curriculum to develop such phases of education to maturity, but it should stimulate an interest in them. Courses in English and foreign languages, public speaking, elementary and advanced economics, and business law attempt to develop this interest in the work of the pulp and paper curriculum. These courses comprise 15 per cent of the total work of the program.

Pulp and Paper Courses

Specialization in pulp and paper technology is not attempted during the first two years of the pulp and paper course since this work requires as a pre-requisite the courses in mathematics, physics and chemistry as well as the elementary work in forestry, botany and wood technology. At the beginning of the Junior year the student is given intensive instruction in papermaking. Approximately 20 per cent of the total work of the course is devoted to this subject. The work is divided into ten distinct courses, an abbreviated description of each course being presented herewith:

I. Technology — 108 hours lecture work on raw ma-

SYNOPSIS OF COURSES: PULP AND PAPER CURRICULUM

FRESHMAN YEAR

First Semester		Second Semester	
Elementary Forestry	2 hrs.	Forest Zoology I	3 hrs.
English I	3 "	English I	3 "
Forest Botany I	3 "	Forest Botany II	4 "
German I or VI	3 "	German I or VI	3 "
Chemistry I	3 "	Chemistry I	3 "
Math. I, Trigonometry	3 "		
	17 hrs.		16 hrs.

SOPHOMORE YEAR

Wood Technology I	5 hrs.	Wood Technology I	3 hrs.
Physics I	4 "	Physics I	4 "
Chem. III, Qualitative	3 "	Chem. III, Qualitative	3 "
Mechanical Drawing IV	2 "	Mech. Drawing V	2 "
Math. II, Algebra	3 "	Math. III, Analytics	3 "
		English II	3 "
	17 hrs.		18 hrs.

Three Months Work in a Pulp or Paper Mill Junior Year

Rhetoric XV, Public Speaking	3 hrs.	Economics I	3 hrs.
Forest Chem. II, Organic	3 "	Forest Chem. II, Organic	3 "
Chem. 104, Quantitative	3 "	Chemical 104 Quantitative	3 "
Pulp & Paper Mfg. I, Technology	3 "	Pulp & Paper Mfg. I, Technology	3 "
Pulp & Paper Mfg. II, Laboratory	2 "	Pulp & Paper Mfg. II, Laboratory	2 "
Pulp & Paper Mfg. III, Machinery	3 "	Pulp & Paper Mfg. III, Machinery	3 "
Pulp & Paper Mfg. IV, Mill Analyses	2 "	Pulp & Paper Mfg. V, Paper Testing	2 "
	19 hrs.		19 hrs.

Three Months Work in a Pulp or Paper Mill Senior Year

Electrical Engineering	5 hrs.	Mech. Engineering	5 hrs.
Wood Technology III	3 "	Paper Making Fibers	3 "
Business Law I	2 "	Business Law I	2 "
Forest Chem. III, Cellulose	3 "	Pulp & Paper Mfg. VIII, Organization	2 "
Economics VII	3 "	Pulp & Paper Mfg. VII, Coloring	2 "
Pulp & Paper Mfg. VI, Pulp Testing	1 "	Pulp & Paper Mfg. X, Problem	3 "
Pulp & Paper Mfg. IX, Problem	1 "		
	18 hrs.		17 hrs.

terials, the pulp making processes, bleaching, beating, sizing, loading and coloring.

II. Technology Laboratory — 216 hours laboratory work devoted to experimental demonstrations of the processes described in Course I.

III. Machinery — 108 hours lecture work on the location and design of pulp and paper mills and on the construction and operation of pulp and paper mill machinery.

IV. Analyses — 108 hours laboratory work devoted to the preparation and analysis of chemical solutions to be used in the experimental pulp and paper mill described in Course II, and to the analysis of recovered chemical products resulting from the operation of this mill.

V. Paper Testing — 108 hours laboratory work devoted to the physical, chemical and microscopical examination of papers and filler mixtures.

VI. Pulp Testing — 54 hours laboratory work devoted to the testing of pulps for freeness, color, strength, bleach consumption, overbleaching, etc.

VII. Coloring —108 hours laboratory work devoted to the identification and strength testing of dyestuffs, the shade matching of colors on paper stocks, and the preparation and application of mottling fibers, color lakes, etc.

VIII. Mill Organization — 36 hours lecture work on type organizations, administration, cost systems, mill records, job analyses, accident prevention, factory hygiene and the merchandising of papers.

IX. Problem — 54 hours library work reviewing all available literature on some problem of interest to the pulp and paper industry, and in the preparation of a report on this investigation outlining laboratory work to be undertaken on some phase of the problem.

X. Problem — 162 hours laboratory work devoted to experimental work on the problem studied in Course IX, and in the preparation of a report on the results of this original investigation.

Summer Employment

Each student at the College of Forestry who majors in the work of the pulp and paper course is required to spend at least six months in a pulp or paper mill as a prerequisite for graduation. The time of employment is optional with the student but it is usually distributed between the last two summer vacation periods. A comprehensive, carefully written report, describing the experience of the student, must be presented and approved by the college before credit will be allowed for this practical experience requirement.

The college attempts to locate mills for its students where practical experience may be obtained. These mills accept the students as laborers, and they are put to work in any part of the mill where needed and are usually paid the going rate of wages for the class of work they perform. The cordial attitude of the New York State mills as well as those of neighboring states in assisting the college to place its students has been very gratifying. In several instances mills have stated definitely that these summer jobs really acted as probationary terms of employment and that the students could rely on permanent employment after graduation if their temporary services were satisfactory.

Graduate Work

The college offers graduate work in all its departments including that of the pulp and paper division. However, the college will not grant a degree to anyone who does not possess at least a general knowledge of forestry. Graduates of other institutions who have not had instruction in general forestry may be recommended for the degree of Master of Science on the completion of one year of satisfactory residence work providing they have at least one minor credit in forestry. A minor credit consists of six credit hours. Since thirty credit hours constitute the minimum requirement for a Master's degree, the major work of the graduate student may be elected from the work of the department of the college in which he is most interested.

The Hammermill Paper Co. through their Chemical Director, Dr. Bjarne Johnsen, have established at the college a fellowship for the coming year (September 1923-1924) to be known as the "Hammermill Fellowship in Pulp and Paper Manufacturing". The fellowship carries a grant of $1,200. to the recipient, who must be a graduate student at the college, his work leading to the degree of M. S. Mr. Burton L. Kassing, 105 Grove Place, Utica, N. Y., a member of the 1923 graduating class at the college, has been designated by the company and the college as the recipient of this signal honor.

NEWFOUNDLAND PULP AND POWER PROJECT PROGRESSING

Sir Richard Squires, former Premier of Newfoundland, who was in Montreal last week, discussed at some length the Humber Power development which promises to form a very important factor in the industry of the island. This development is being undertaken by the Newfoundland Pulp and Power Company, which, after reorganization, succeeded the Newfoundland Products Company. "The work is proceeding most expeditiously," said Sir Richard. "There are now approximately 2,100 men employed and the progress is quite apparent. The Armstrong-Whitworth Company have brought from England a lot of material and rolling stock, such as dumpcars, which were not available in the island and this is aiding in the progress. The company has also brought out a number of technical men to direct operations.

"This year the work will be largely concentrated on the power end of the project and to changing the railroad so that it will be clear of the waters of the lake. It is hoped that in November, 1924, the work will be well advanced and that within two years the process of manufacturing will be a fact.

"The power development of the plant will amount to 200,000 horse-power or more and a considerable proportion of that will be required for the manufacturing plant which is designed for a production of 400 tons of paper daily."

Sir Richard explained that the financing of the enterprise was by means of £2,000,000 bonds, guaranteed by the Imperial Government, £2,000,000, guaranteed by the Newfoundland Government, while the Armstrong-Whitworth Company had made large cash advances.

The Sir W. S. Armstrong Whitworth Company are represented in Canada by the Charles Walmsley Co. (Canada) Ltd.

REGRETS

The Pulp and Paper Magazine learned with deep regret of the death of Mr. T. E. Royle of Davies & Royle, paper agents of London. This concern is widely known as paper distributers and many will learn with sorrow of Mr. Royle's demise.

STEAM ACCUMULATORS

By M. EMANAUD

(Translated from "La Technique Moderne", xv, 193-197 (April 1, 1923) and 237-241 (April 15, 1923), by A. Papineau-Couture)

(continued from last issue.)

Case 8 — When, instead of being used for heating buildings, in which case the temperature can be varied within relatively wide limits, the steam is required for physical or chemical processes, such as evaporation, distillation, digesting, etc., the temperature often is of paramount importance, and a difference of a few degrees may make it worthless. In this case the accumulator can be used as a steam **regenerator,** that is, it may be arranged so as to restore to the steam the value which it has lost. This can be done by merely raising the temperature a few degrees, which can be accomplished in various ways:

1) By adding steam at a higher temperature, or, if need be, live steam extracted from a bleeder turbine or even directly from the boiler. For instance, 1 kilo of steam under a pressure of 10 kilos can furnish 561 calories to an accumulator at 100° C., thereby raising the temperature of 110 liter of water from 100° to 105° C.;

2) By heating by means of waste heat (waste gases from muffles or other furnaces, blast furnace gases, etc.);

3) By heating exteriorly by means of flue gases, either before or after their passage through the economizer; if need be a special small furnace can be used for this purpose;

4) By compression: Kammerer's report can be profitably consulted on this subject;

5) By electric heating: this method, which is quick and easy to regulate, can render very great services. Its use resolves itself to a matter of cost.

Some electric steam boilers are in themselves regular accumulators. There are at present two tendencies in the construction of these boilers: on the one hand, Italian and Swiss constructors favor the use of small units in which the production of steam at each instant is equal to the demand; the Revel boiler is a good example of this; on the other hand, there are the very large boilers which have a considerable water capacity, such as the Bergeron-Frédet boiler. The former can be combined with a steam accumulator while the latter constitute in themselves regular accumulators. The one shown diagrammatically in Fig. 12 is part of a battery of three boilers installed at the Frédet paper mill at Brignoud, Isère (France).

It consists of a cylindrical shell 1.50 meters in diameter and 10 meters long; it produces 4,500 kilos of steam per hour at a pressure of 6 kilos (about 80 pounds per square inch), and takes 3,500 kilowatts as three-phase current at 6,500 volts. The current is led in through the three electrodes 1, 2, 3, and the circuit is closed by the water in the boiler, which is heated to boiling by Joule effect. The electrodes are placed in three bells, and the water level in the latter can be varied by means of the valve V. The steam generated in the bells passes out through the pipes a, and is led back into the body of the boiler at b. If the valve V is slightly closed the pressure rises in the bells and lowers the water level in them; the degree of immersion of the electrodes decreases, and the production of steam falls off. The water can be even completely driven out of the bells, thereby uncovering the electrodes and stopping all production of steam.

The steam is drawn from the generator through a separator.

This installation is simple and compact, of immersing them in a large volume of water, and consequently of considerable power consumption. A certain amount of care is required to obtain regular heating and uniform temperature distribution. (A more complete description of this boiler will be found in Paper Trade Journal , lxxiv, No. 3, January 19, 1922.)

Though we have not mentioned it here, this apparatus can of course be used directly as a large unit boiler.

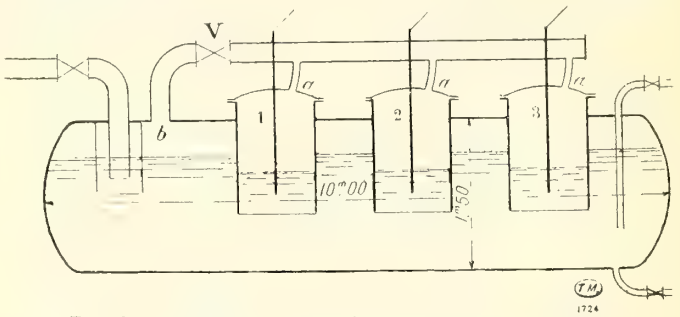


Fig. 12. — Schéma de chaudière à vapeur électrique, système Bergeron-Frédet.

Fig. 12 — Diagram of the Bergeron-Frédet electric steam boiler

Case 9 — In this case we consider the accumulator combined with a reducing valve as a pressure transformer, allowing of the production of steam under different conditions from its utilization, especially for production at much higher pressures.

It is well known that it is advantageous to use steam at very high pressures: working pressures of 25 kilos (about 325 pounds per square inch) are now commonly used, even in large plants, and boilers and engines have been constructed in Germany for working pressures of 60 atmospheres. But in certain cases it may be advisable to generate the steam at even higher pressures.

On the one hand the latent heat of vaporization of water decreases fairly rapidly with increase in temperature (see Fig. 13). Consequently, as stated by Rauber (Report of the Commission on the Utilization of Fuel, Journal Officiel", April 14, 1921) if a given quantity of heat is conducted through the heating surface of the boiler and is used entirely for evaporating the water (which is supposed to have been previously heated to the boiling temperature), the higher the pressure the greater the amount of water which it will evaporate."

On the other hand, ebullition becomes easier as the temperature rises, for the capillary constant of water in the presence of steam decreases and tends towards zero at the critical temperature, which is in the neighborhood of 370° C. We can therefore conclude that unknown forces, generally called **cohesion,** which must be overcome in order to convert water into steam, decrease as the temperature rises.

It is indispensable that ebullition should take place easily in the boiler, and this factor becomes more and more important as the rate of steam production is increased. The main factor which limits the increase in the rate of evaporation is the fear of unduly increasing the temperature of the heating surface, and this temperature depends essentially on the rate at which the heat passes through the metal and is transmitted to the water.

This transmission is effected in three ways: conduction, convection, and ebullition. The heat conductivity of water is negligible in this case. Convection comes into play to a greater extent, but even so the currents have a low velocity and they carry but a small amount of heat, representing the calories absorbed in heating water between two neighboring temperatures, even when the temperature is far from being uniform throughout the boiler. The real cause of the cooling of the heating surface of the boiler is the removal of the heat carried off by the bubbles of steam. When a bubble of steam is formed it absorbs a considerable amount of heat (its latent heat of vaporization); it then rises through the mass of water creating rapid circulation currents and carrying its heat with it. It is therefore the important factor in the absorption of heat from the metal surface.

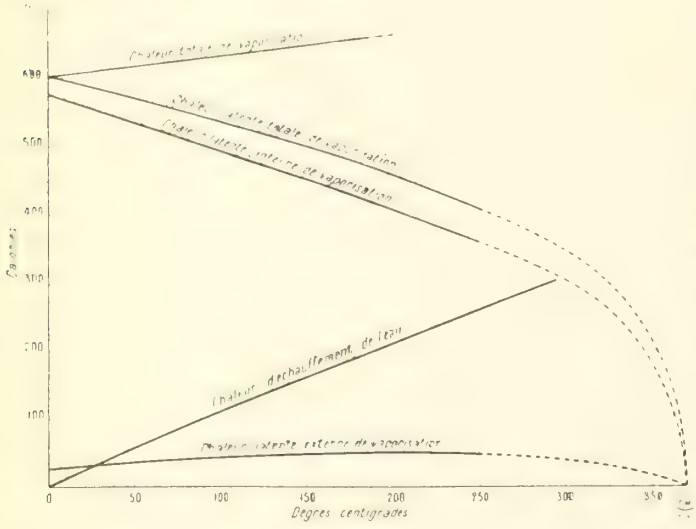


Fig. 13. — Variations des chaleurs de vaporisation de l'eau avec la température.

Fig. 13 — Variations in the latent heat of vaporization of water with temperature

Chaleur totale de vaporisation — Total heat of vaporization
Chaleur latente totale de vaporisation — Total latent heat of vaporization
Chaleur latente interne de vaporisation — Internal latent heat of vaporization
Chaleur latente externe de vaporisation — External latent heat of vaporization
Chaleur d'échauffement de l'eau — Heat required to heat the water

In boilers in which the rate of evaporation is very high boiling must be extremely rapid, and it is advantageous that they should work under a very high pressure, first, for the reasons given above, and secondly, because increasing the pressure decreases the volume of the steam and consequently the size of the boiler and other equipment. Nearly all troubles experienced with circulation and with getting proper contact of the water with the heating surfaces is caused by the volume of the steam, and they are lessened by decreasing the steam volume.

Moreover, the danger in case of explosion, which might be feared when the working pressure is increased, decreases with the dimensions of the boiler. So it would seem that in cases where there are important weight and size limitations, more especially in traction engines, it is advisable to use as high a pressure as mechanical limitations will allow, even up to pressures approaching the critical pressure (200 atmospheres), which can now be handled.

But in order to ensure the absolute regularity required in the operation of such a boiler it will be absolutely necessary to combine it with an accumulator working at a lower pressure together with a feed water heater. The size and weight of the installation are evidently increased thereby; but these additions are easier to construct and instal and present less danger.

The furnace of the boiler would also have to be suitably designed. Evidently the flue gases would have to leave the boiler at a very high temperature, and the efficiency would be very low unless means were provided to recover part of their heat. This would ultimately be accomplished by preheating the air for combustion to a high temperature, which would further improve the efficiency, for the value of the calories supplied depends essentially on their thermal potential.

Case 10 — Finally, it may be mentioned that an accumulator can be placed between a machine which exhausts intermittently and its condenser to regulate the delivery of steam to the condensate and make it run more smoothly.

Conclusions

It is evident that some installations could be classified under two or more of the preceding headings, and that some of the latter could be combined together. Combinations of various types could even be considered.

The conditions imposed by the use of accumulators are not numerous: a most important factor is to provide them with a suitable insulation to minimize radiation losses. It should be remarked, however, that losses from this source are not as bad as might appear at first sight, for if the surface is at times very large, the ratio of the surface to the volume is small.

Accumulators make for continuity and regularity of running, and thus contribute to raise efficiency and lower costs.

They can readily be controlled automatically: as the changes taking place inside them are reversible they answer quite readily to automatic control apparatus based on variations of pressure or on other principles. Their operation does not require any attention, and they can easily be operated at a distance.

In a word, in many installations they can render valuable services, and they add a further element of elasticity and flexibility in the use of steam, which in itself is already so remarkable in these respects.

WESTERN CANADA PULP MILL IN BANK DIFFICULTY

It is reported from Toronto that one of the largest losses incurred by the Home Bank was the Western Canada Pulp and Paper Company which was a producer of kraft pulp and paper.

Three of the directors of the defunct bank are stated to be on the board of the paper company which it was hoped could be revived on a paying basis. The property, however, has been closed down for some time having suffered severely of the drop in the kraft market some time ago.

American Pulpwoods

The Suitability of Various Species of American Woods for Pulp and Paper Production

By SIDNEY D. WELLS

(continued from last issue.)

SYCAMORE — *Platanus occidentalis.* Wt. 29 lbs. Fiber 1.7 m.m.

Range — Southeastern New Hampshire and southern Maine to Northern Vermont and Lake Ontario (Don River, near north shores of the lake); west to eastern Nebraska and Kansas and south to northern Florida, central Alabama and Mississippi, and Texas (Brazos river and thence south to Devils river).

Common Names — Sycamore (Vt., N.H., Mass., Conn., R.I., N.Y., N.J., Pa., Del., Va., W.Va., N.C., S.C., Ga., Fla., Ala., Miss., La., Tex., Ky., Ark., Mo., Ill., Ind., Iowa, Kansas, Nebr., Mich., Wis., Ohio, Ont.); Buttonwood (Vt., N.H., R.I., Mass., N.Y., N.J., Pa., Del., S.C., Ala., Miss., La., Tex., Ark., Mo., Ill., Nebr., Mich., Minn., Ohio, Ont.); Buttonball-tree (Mass., R.I., Conn., N.Y., N.J., Pa., Del., Miss., La., Mo., Ill., Iowa, Mich., Nebr., Ohio); Button-ball (R.I., N.Y., Pa., Fla.); Planetree (R.I., Del., S.C., Kans., Nebr., Iowa); Water Beach, (Del.); Platane, (La.); Cotonier (La.); Bois puant (La.); Co-da-ta-cha-wun-nes — "Big stockings" (Indians, N.Y.)

Sulphite Pulp.
Yield — 1,300 lbs.
Character — Easily pulped and bleached; Poor strength.
Possible uses — Similar to aspen.

Soda Pulp.
Yield — 1,300 lbs.
Character — Soft, easily bleached.
Possible uses — Similar to aspen.

OHIO BUCKEYE — *Aesculus glabra.* Wt. 21 lbs. Fiber—

Range — From Pennsylvania (western slopes Allegheny Mountains) to northern Alabama (Tennessee River Valley and Mountains) and west to southern Iowa, central Kansas, and Indian Territory.

Common Names — Ohio buckeye (Miss. Ga., Ark., Mo., Ohio); Buckeye (Pa., Ky., Mo., Ill., Ind., Ohio, Iowa, Kans.); Fetid buckeye (W.Va.); Stinking buckeye (Ala., Ark.); American horse chestnut (Pa.).

Sulphite Pulp.
Yield — 940 lbs.
Character — Easily pulped; Rather difficult to bleach; Silver gray color.
Possible uses — Same as aspen.

Soda Pulp.
Yield — 940 lbs.
Character — Fairly easily pulped; Rather difficult to bleach; Soft, opaque, short fiber.
Possible uses — Same as aspen.

MANGROVE — Rhizophora mangle. Wt. 56 lbs.[1] Fiber

Range — Southern coast of Florida (Mosquito Inlet and Cedar Keys to southern islands); Mississippi delta; Texas coast; eastern and western coasts of Mexico; Lower California; from Central America along northern and eastern coast of South America to the limits of the tropics; Bermudas, Bahamas, West Indies; Galapagos Islands.

Common Name — Mangrove (Fla.)

Sulphite Pulp — Did not test.

Soda Pulp.
Yield — 2,400 lbs.
Character — Readily pulped; Difficult to bleach; Short fiber.
Possible uses — The same as aspen.

BUTTERNUT — *Juglans cinerea.* Wt. 22 lbs Fiber 1.2 m.m.

Range — Southern New Brunswick to Delaware and on the Appalachian Mountains to Georgia and Alabama (head waters of Black Warrior River, Winston County); westward through Ontario to Dakota, southeastern Nebraska, southern Missouri, and northeastern Arkansas.

Common Names — Butternut (Me., N.H., Vt., Mass., R.I., Conn., N.Y., N.J., Pa., Del., W.Va., N.C., S.C., Ala., Ark., Ky., Mo., Ill., Iowa, Ind., Mich., Minn., Wis., Kans., Neb., Ohio, Ont.); White Walnut, (Del., Pa., Va., W.Va., N.C., S.C., Ala., Ky., Mo., Ill., Ind., Wis., Iowa, ...H., S.C.); Butternut (N.J.)

Sulphite Pulp.
Yield — 1,000 lbs.
Character — Easily pulped and bleached; Weak and poor color.
Possible uses — Same as aspen.

Soda Pulp.
Yield — 1,000 lbs.
Character — Easily pulped; Difficult to bleach; Short, opaque fiber.
Possible uses — Same as aspen.

CHESTNUT, ELMS, OAKS, AND OTHER RING POROUS WOODS

CATALPA — *Catalpa catalpa.* Wt. 31 lbs. Fiber ....

Range — Supposed to be indigenous only in southwestern Georgia, western Florida, central Alabama and Mississippi, but widely cultivated and naturalized elsewhere east of the Rocky Mountains.

Common Names — Catalpa (Mass., R.I., Conn., N.Y., N.J., Pa., Del., W.Va., N.Ca., S.Ca., Ala., Ga., Fla., Miss., La., Ark., Ky., Mo., Ill., Kans., Nebr., Iowa, Mich., Wis., Ohio, Minn.); Indian Bean (Mass., R.I., N.Y., N.J., Pa., N.C., Ill.); Beantree (N.J., Del., Pa., Va., La., Nebr.); Catawba (W.Va., Ala., Fla., Kans.); Cigartree (R.I., N.J., Pa., W.Va., Mo., Ill., Wis., Iowa); Catawba-tree (Del.); Indian Cigar tree (Pa.); Smoking bean (R.I.).

Sulphite Pulp.
Yield — 1,390 lbs.
Character — Fairly easily pulped; Difficult to

[1] From comparatively few specimens.

bleach; Short fiber, specky and pink.
Possible uses — Same as aspen.

Soda Pulp.
Yield — 1,340 lbs.
Character — Easily pulped and bleached; Short opaque fiber.
Possible uses — Same as aspen.

CHESTNUT — *Castanea dentata* — Wt. 25 lbs. Fiber 1.0 m.m.

Range — From southern Maine to northwestern Vermont (Winooski River), southern Ontario, and southern shores of Lake Ontario to southeastern Michigan; southward to Delaware and southeastern Indiana, and on the Allegheny Mountains to central Kentucky and Tennessee, central Alabama, and Mississippi.

Common Names — Chestnut (Me., N.H., Vt., Mass., R.I., Conn., N.Y., N.J., Pa., Del., Va., W.Va., N.C., Ga., Ala., Miss., Ky., Mo., Mich., Ont.); O-her-yah-taf — "Prickly Burr" (Indians, N.Y.).

Sulphite Pulp — (Unextracted wood.)
Yield — 1,100 lbs.
Character — Very difficult to bleach; Dark colored, weak pulp.
Possible uses — None.

Soda Pulp.
Yield (on extracted chips) 950 lbs.
Character — Soft, easy bleaching, a little hard to cook.
Possible uses — Similar to aspen. (Unextracted wood can be pulped but is very difficult to reduce and bleach.)

HACKBERRY — *Celtis occidentalis.* Wt. 30 lbs. Fiber 1.1. m.m.

Range — From St. Lawrence River (St. Helens Islands, near Montreal) to southern Ontario; in the United States from Massachusetts (Massachusetts Bay) to northwestern Nebraska, North Dakota, southern Idaho (Boise City), eastern Washington and Oregon (Snake River), western Washington (Puget Sound), Nevada (East Humboldt Mountains), New Mexico, and south to Florida (Biscayne Bay and Cape Romano), middle Tennessee, Missouri, eastern Kansas, Indian Territory, and eastern Texas.

Common Names — Hackberry (N.H., Vt., R.I., N.Y., N.J., Del., Pa., W.Va., N.C., S.C., Ala., Fla., Miss., La., Tex., Ariz., Ark., Ky., Me., Ill., Ind., Wis., Iowa, Kan., Nebr., Mich., Minn., S. Dak., Ohio, Ont.); Sugarberry (N.Y., Pa., Del., N.C., S.C., Minn.); Nettle-tree (R.I., Mass., Del., Mich.); American Nettle-tree (Tenn.); Hoop Ash (Vt.); One-berry (R.I.); Hack-tree (Minn.); Juniper-tree (N.J.); Bastard elm (N.J.).

Sulphite Pulp.
Yield — 1,300 lbs.
Character — Easily pulped and bleached; Short fiber exceptionally light colored.
Possible uses — Same as aspen.

Soda Pulp.
Yield — 1,200 lbs.
Character — Easily pulped; Rather difficult to bleach; Short fiber not very opaque.
Possible uses — Same as aspen.

SASSAFRAS — *Sassafras sassafras.* Wt. 26 lbs. Fiber .9 m.m.

Range — From eastern Massachusetts through southern Vermont, southern Ontario, and central Michigan, southeastern Iowa, eastern Kansas, and Indian Territory; south to central Florida and Texas (Brazos River).

Common Names — Sassafras (Vt., N.H., Mass., Conn., R.I., N.Y., N.J., Pa., Del., Md., Va., W.Va., N.C., S.C., Ga., Fla., Miss., La., Tex., Ark., Ky., Mo., Ill., Ind., Kans., Neb., Mich., Ohio, Ont.); Saxifrax (Fla.); Saxifrax-tree (Tenn.); Sassafac (W. Va.); Sassafrac (Del.); Gumbo file (La., Negro dialect); Wah-eh-nah-kas — "Smelling stick" (Onondaga Indians, N.Y.)

Sulphite Pulp.
Character — Very difficult to pulp.

Soda Pulp.
Yield — 780 lbs.
Character — Easily pulped; Difficult to bleach; Short, opaque fiber.
Possible uses — Same as aspen.

CORK ELM — *Ulmus racemosa.* Wt. 36 lbs. Fiber 1.32.

Range — From Quebec (eastern townships) through Ontario, and south through northwestern New Hampshire to southern Vermont; westward through northern New York, southern Michigan, and Wisconsin (Lake Mendota, near Madison) to northeastern Nebraska (Meadville, Keyapaha County), southeastern Missouri, and middle Tennessee.

Common Names — Cork elm (Vt., Mass., R.I., N.Y., N.J., Ark., Ky., Mo., Wis., Mich., Ohio, Iowa); Rock elm (R.I., W.Va., Ky., Mo., Ill., Wis., Iowa, Mich., Nebr., Ont.); Hickory elm (Mo., Ill., Ind., Iowa); White elm Ont); Thomas elm (Tenn.); Northern cork-barked elm (Tenn.); Cork-bark elm (N.Y.); Northern cork elm (Vt.); Wahoo (Ohio); Cliff elm (Wis.); Corky white elm.

Sulphite Pulp.
Yield — 1,620 lbs.
Character — More difficult to pulp and bleach than aspen; Poor color and strength.
Possible uses — Few.

Soda Pulp.
Yield — 1,620 lbs.
Character — Easily pulped and bleached; Soft, and short fibered.
Possible uses — Same as aspen.

SLIPPERY ELM — *Ulmus pubescens.* Wt. 30 lbs. Fiber 1.7 m.m.

Range — From Lower St. Lawrence River (Orleans Island) through Ontario to North Dakota and eastern Nebraska; south to western Florida, central Alabama, and Mississippi and Texas (San Antonio River).

Common Names — Slippery elm (Vt., N.H., Mass., R.I., N.Y., N.J., Pa., Del., Va., W.Va., N.C., S.C., Fla., Ala., Ga., Miss., La., Tex., Ky., Mo., Kans., Nebr., Ohio, Ill., Ind., Wis., Mich., Iowa, Minn., Ont.); Red elm (Vt., Mass., N.Y., Del., Pa., W.Va., S.C., Ala., Miss., La., Tex., Ark., Ky., Mo., Ill., Kans., Nebr., Iowa, Ohio, Ont., Wis., Mich., Minn.); Red-wooded elm (Tenn.); Rock elm (Tenn.); Orme gras (La.); Moose elm; Co-hoosk-ah — "It slips" (Indians N.Y.).

Sulphite Pulp.
Yield
Character — Difficult to pulp.
Soda Pulp.
Yield — 1,260 lbs.
Character — Easily pulped; Rather difficult to bleach; Short fiber.
Possible uses — Same as aspen.

WHITE ELM — *Ulmus americana.* — Wt. 27 lbs. Fiber 1.6 m.m.
Range — From southern Newfoundland to Lake Superior (north shores) and to the eastern base of the Rocky Mountains (here up the Saskatchewan River to latitude 54° 30″); south to Florida (Cape Canaveral and Pease Creek); west to Dakota (Black Hills), western Nebraska, western Kansas, Indian Territory, and Texas (Rio Concho River.)
Common Names — American elm (Vt., Mass., R.I., N.Y., Del., Pa., N.C., Miss., Tex., Ill., Ohio, Kans., Nebr., Mich., Minn., Ont.); White elm (Me., N.H., Vt., Mass., R.I., N.Y., Pa., N.J., Del., Va., W.Va., N.C., S.C., Ala., Fla., Miss., La., Tex., Aark., Ky., Mo., Ill., Ind., Kans., Nebr., Ohio, Ont., Iowa, Mich., Main., N.D., S.D.); Water elm (Miss., Tex., Ark., Mo., Ill., Iowa, Mich., Ohio, Minn., Nebr.); Elm (Mass., R.I., Conn., N.J., Pa., N.C., S.C., Iowa, Wis.); Orme Maigre (La.); Swamp elm, Rock elm.
Sulphite Pulp.
Not tested.
Soda Pulp.
Yield — 1,080 lbs.
Character — Easily pulped; Fairly easily bleached; Short fiber.
Possible uses — Same as aspen.

WHITE ASH — *Fraximus americana.* Wt. 34 lbs. Fiber 1.2 m.m.
Range — From Nova Scotia and Newfoundland to Florida and westward to Ontario and northern Minnesota, eastern Nebraska, Kansas, Oklahoma and Texas ,Ttrinity River).
Common Names — White ash (Me., N.H., Vt., Mass., R.I., Conn., N.Y., N.J., Del., Pa., Va., W.Va., N.C., S.C., Ga., Fla., Ala., Miss., La., Tex., Ky., Mo., Ill., Ind., Iowa, Kansas, Nebr., Mich., Ohio, Ont., Minn., N. Dak., Wis.); Ash (Ark., Iowa, Wis., Ill., Mo., Minn.); American ash (Iowa); Franc-Frene (Quebec); Cane ash (Ala., Miss., La.).
Sulphite Pulp.
Yield — 1,530 lbs.
Character — Easily pulped; A little hard to bleach; Very weak; Poor color.
Possible uses — Few.
Soda Pulp.
Yield — 1,350 lbs.
Character — Very difficult to reduce and bleach.
Possible uses — Few.

RED OAK — Quercus rubra. Wt. 35 lbs. Fiber 1.5 m.m.
Range — Nova Scotia and southern New Brunswick through Quebec and along the north shores of Lake Huron to near Lake Namekagon; south to middle Tennessee and Virginia, and along the Appalachian Mountains to northern Georgia; west to eastern Nebraska central Kansas.
Common Names — Red oak (Me., Vt., N.H., Mass., R.I., N.Y., N.J., Pa., Del., Va., W.Va., N.C., S.C., Ga., Ark., Mo., Ky., Ill., Ind., Iowa, Nebr., Kansas, Mich., Minn., S. Dak., Ont.); Black oak (Vt., Conn., N.Y., Wis., Iowa, Nebr., S. Dak., Ont.); Spanish oak (Pa., N.C.).
Sulphite Pulp.
Yield — 1,600 lbs.
Character — Easily pulped; Easily bleached; Very weak; Poor color.
Possible uses — Few.
Soda Pulp.
Yield — 1,400 lbs.
Character — Very difficult to pulp and bleach.
Possible uses — Few.

WHITE OAK — *Quercus alba.* Wt. 37 lbs. Fiber 1.5 m.m.
Range — From southern Maine to southwestern Quebec and through central and southern Ontario, lower peninsula of Michigan and southern Minnesota to southeastern Nebraska and eastern Kansas; south to northern Florida and Texas (Brazos river.)
Common Names — White oak (Me., N.H., Vt., Mass., R.I., Conn., N.Y., N.J., Pa., Del., Va., W.Va., N.C., S.C., Ala., Fla., Ga., Miss., La., Tex., Ky., Mo., Ohio, Ill., Ind., Kansas, Nebr. Mich., Wis., Minn., S. Dak., (cult.), Iowa, Ont.); Stave oak (Ark.).
Sulphite Pulp.
Yield — 1,600 lbs.
Character — Difficult to pulp and bleach.
Possible uses — Few.
Soda Pulp.
Yield — 1,480 lbs.
Character — Difficult to pulp and bleach.
Possible uses — Few.

HICKORY — *Hicoria alba.* Wt. 40 lbs. Fiber 1.4 m.m.
Range — Ontario to Florida (Cape Canaveral and Tampa Bay) and west to Missouri, eastern Kansas, Indian Territory and Texas (Brazos River).
Common Names — Mocker nut (Mass., R.I., N.Y., N.J., Del., Ala., Miss., La., Tex., Ark., Ill., Iowa, Kans.); Whiteheart hickory (R.I., N.Y., Pa., Del., N.C., Tex., Ill., Ont., Iowa, Kans., Minn., Nebr.); Bullnut (N.Y., Fla., Miss., Tex., Mo., Ohio, Ill., Minn.); Black hickory (Tex., Miss., La., Mo.); Big-bud, Red hickory (Fla.); Hickory (Ala., Tex.); Hardbark hickory (Ill.); Hickory (Pa., S.C., Nebr.); Common hickory (N.C.); White hickory (Pa., S.C.); Hickory nut (Ky.); Big hickory nut (W. Va.); Hog nut (Del.).
Sulphite Pulp.
Yield — 1,680 lbs.
Character — Difficult to pulp; Readily bleached; Short fiber.
Possible uses — Same as aspen.
Soda Pulp.
Yield — 1,380 lbs.
Character — Readily pulped; Difficult to bleach; Short fiber.
Possible uses — Same as aspen.

LOCUST — *Robinia pseudacacia.* Wt. 41 lbs. Fiber
Range — From Pennsylvania (on the Appalachian Mountains from Locust Ridge in Marion County) to northern Georgia. Widely naturalized through cultivation and other agencies throughout the

United States east of the Rocky Mountains; possibly indigenous in parts of Arkansas (Crowleys Ridge, etc.) and eastern Indian Territory; also in the Great Smoky Mountains of eastern Tennessee (Sevier County.)

Common Names — Locust (Me., N.H., Vt., Mass., R.I., Conn., N.Y., N.J., Pa., Del., W. Va., N.C., S.C., Ga., Ala., Miss., Tex., Ky., Ark., Ariz., Ill., Wis., Ohio, Ind., Kans., Nebr., Mich., Iowa, Minn.); Black locust (Pa., Va., W. Va., N.C., S.C., Ala., Miss., La., Tex., Ark., Ky., Mo., Ill., Ohio, Ind., Iowa, Kans., Nebr., Mich., Minn.); Yellow locust (Vt., Mass., N.Y., Pa., Del., Va., W. Va., Miss., La., Ill., Ind., Kans., Nebr., Minn.); White locust (R.I., N.Y., Tenn.); Red locust (Tenn.); Green locust (Tenn.); Acacia (La.); False acacia (S.C., Ala., Tex., Minn.); Honey locust (Minn.); Bastard acacia (lit.); Pea-flower locust; Post locust (Md.).

Sulphite Pulp.

Yield — 1,970 lbs.

Character — Difficult to pulp; Very difficult to bleach; Short fiber.

Possible uses — Few.

Soda Pulp.

Yield — 1,700 lbs.

Character — Fairly easily pulped; Very difficult to bleach; Short opaque soft fiber.

Possible uses — Same as aspen.

YUCCA — *Yucca constricta.* Wt. 18 lbs. Fiber .....

Range — Southwestern Texas to southern Arizona; northern Mexico.

Soda Pulp.

Yield — 720 lbs.

Character — Readily pulped; Rather difficult to bleach; Short pithy fiber.

Possible uses — Few.

CABBAGE PALMETTO — *Sabal palmetto.* Wt. 23 lbs. Fiber—

Range — Coast region from North Carolina (Smiths Island, Cape Fear River) to Florida (Key Largo), and on the Gulf coast to the Apalachicola River.

Common Names — Cabbage palmetto (N.C., S.C.); Bank's palmetto (N.C.); Palmetto (N.C., S.C.); Cabbage-tree (Miss., Fla.); Tree palmetto (La.).

Sulphate Pulp.

Yield — 1,400 lbs.

Character—Readily pulped at low pressure; Fairly easily bleached; Pithy fiber of fair felting properties.

Possible uses — In the manufacture of book, magazine and similar papers.

Soda Pulp.

Yield — 1,150 lbs. of a low grade pithy fiber.

Character — Coarse, tender fiber; Impossible to bleach; Poor color.

Possible uses — Few.

THE END

Note: This article is to be reprinted as a pamphlet, which will be distributed by the United States Forest Products Laboratory at Madison, Wis.

George Allan, of the Buntin, Reid, Company, Limited, has returned from a business trip to Winnipeg.

H. G. French, of the Allan Paper Company, Toronto, is spending his vacation at Kirkfield, Ont.

Woodlands Section

COMMISSION TO INQUIRE INTO FOREST WEALTH

Ottawa.— The personnel of the commission which will inquire into the forest resources of Canada with a view to determining the need or otherwise of an embargo upon the exportation of pulpwood was announced last Tuesday by the Prime Minister.

Joseph Picard manufacturer, Quebec city, is named chairman of the commission and the other members are: Apollos Bamber Kerr, barrister, Toronto; Robert W. McLelland, barrister, Fredericton, N. B.; Joseph G. Sutherland, lumberman, Clyde River, N. S., and William Anstie, contractor, Vancouver, B. C.

The commissioners are instructed to inquire into and report upon the forest resources of Canada with particular regard to the following points:

The extent in each province of wood of various kinds available for pulp.

The quantity of wood so available on lands owned by the provincial governments and subject under provincial laws and regulations to restrictions requiring the partial or total manufacture of such wood in Canada.

The quantity of wood so available on lands owned by the Dominion Government and subject under federal laws and regulations to restrictions requiring partial or total manufacture in Canada.

The quantity of such wood on other lands and the conditions under which such lands are held whether by ownership or lease, whether by corporations or individuals, whether by citizens of Canada or other countries.

The quantity of pulpwood produced in each province of Canada during the past ten years showing the portion used in Canada and the portion exported.

The question of the prohibition or restriction of the export of pulpwood from Canada.

Any other matter touching upon the production, manufacture or sale of pulpwood essential to comprehensive consideration of the question of prohibition or restriction of the export of pulpwood from Canada.

The making of recommendations that may be deemed expedient for the conservation of pulpwood for present or future use.

Ernest Herbert Finlayson, acting director of forestry in the Department of the Interior, is attached to the commission as secretary.

Mr. Picard, as chairman of the commission, will receive $35 a day for every day during which the board is engaged in the work, while the other commissioners will get $25 a day. An expense allowance of $15 a day is permitted members of the commission in addition to actual expense of transportation. The secretary will receive a similar expense allowance while absent from Ottawa in pursuit of his duties.

THE PERSONNEL OF THE COMMISSION

In order to inform the industry as fully as possible of the situation, the *Pulp and Paper Magazine* telegraphed to all of the appointees to the commission, asking their present or past connection with or interest in the matter to be investigated. The following telegraphic replies have been received.

From The Chairman, JOSEPH PICARD

Telegram received, Have had no interest in the subject mentioned. Herewith extract from the Press:

"Joseph Picard, general manager of The Rock City Tobacco Co., Ltd. (Quebec), is the son of a settler and was born in 1864 at St. Antoine, Temiscouata Co. Was educated at the "Académie Commerciale de Québec". Started business in the Supplies & Groceries Trade — In 1899, he associated with Napoléon Drouin to establish the Rock City Tobacco Co., Ltd., of which he has not ceased to be the manager since its very foundation. Endowed to a high degree with a talent for organization, he has succeeded in conducting numerous enterprises, in helping in the social work of his community and besides in finding time to pursue studies in social and political economy. The tobacco industry in Canada is indebted to him for many remarkable accomplishments and he is regarded as an authority on the subject.

Although he is naturally inclined to avoid public honors and of a retiring disposition, his fellow citizens have always pushed him into the commercial and social current of his town. He was president of the Quebec Chamber of Commerce during the hard times of the war. He has been for many years a member of the National Executive of the Association of Canadian Manufacturers and Chairman of the Tariff Committee for 1922-23. He is Chairman of the Quebec School Commission since 1922. He is one of the best informed men in his calling, knows English as well as French and is an authority who is sure to be consulted on all kinds of commercial problems. Those who know him well all agree that the Government has been fortunate in choosing him and that nobody is better qualified to carry through the enquiry of the Commission on Pulpwood Resources".

* * *

From W. A. ANSTIE

Vancouver, B.C., August 20.

Replying your telegram. Have been actively identified since 1922 with lumber industry British Columbia. Age 42. Commenced career with Hon. W. C. Wells in Kootenays during 1900 and after five years became secretary Mountain Lumbermen's Association, which office held for seven years and resigned in 1913 to accept managing directorship largest operating lumber corporation in Mountains with five sawmills, and employing up to 1,200 men. Retired from that position last year, elected president Lumbermen's Association 1913 and have been active in many public organizations for past fifteen years. Organized first limit holders Association in Province in 1909 and personally directed campaign for stability of title to timber licenses which resulted successfully. For fifteen years have played leading part in matters affecting interests of industry as between governments and railways, also in relationship with allied industries, trade, extension, and marketing for over two years. Have conducted exhaustive study of pulp and paper industry for British Associates with view to establishment important operations in this Province. In the course of this investigation have visited practically all Canadian plants observing conditions and methods. Am personally interested in Western timber holdings and my other interests are for construction work and mining. Have travelled abroad extensively and am well posted regarding Canadian and American conditions.

* * *

From W. McLELLAN

Fredericton, N.B., August 20.

Born 1874. Graduated from New Brunswick University in Arts and Civil Engineering. Admitted barrister 1897 and in practice law since then; been prominently identified with lumber and pulpwood concerns. Organized a company and lumbered for ten years when mills burned and sold holdings. Organized New Brunswick Lumbermen's Association in 1918 and continued its secretary treasurer. Am director and secretary Miramichi Log Driving Company of New Brunswick. Organized and became president Palmer McLellan Company, Fredericton in 1920, which is now largest manufacturers of oil-tanned footwear in Canada. In 1919 joined board company of Belfast, which is one of Ireland's largest manufacturers of linen.

* * *

From our Toronto Correspondent on

A. B. KERR

A. B. Kerr, of Toronto, who has been appointed as one of the members of the Royal Commission to investigate Canada's pulpwood resources was, during the three years from 1917 to 1919, junior counsel on the paper inquiry committee appointed by the Publishers' Association of Canada. He was also secretary of the paper committee. Born and educated in Toronto he graduated from Osgoode Hall after being at Victoria College, and was called to the Bar in October, 1915.

FORESTRY CONFERENCE MOVES WEST

Following a visit to the Ontario Provincial Forest Station at St. Williams the delegates to the British Empire forestry convention spent a day in Toronto where they were officially received by Premier Ferguson and Hon. James Lyons, Minister of Lands and Forests and later were driven about the city. Before leaving Toronto for the Government Forest Reserve at Algonquin Park and the Western Provinces, Lord Lovat and other members expressed themselves as delighted with the Government Experimental Station at St. Williams, especially in regard to the skilled silvi-culture of cut-over woods, and the satisfactory plantation mixture of Scotch fir and larch. Lord Lovat said he was particularly struck with the plantation of red pine, and the European plantation in various mixtures. Beautifully kept nurseries, 600 acres in extent, contained from ten to fifteen million plants and certain ingenious methods of watering dry, sandy soil appealed to him greatly.

Foresters Visit Abitibi Section

The British Empire forestry conference which is touring Canada over the Canadian National Railways completed one of the most interesting and instructive portions of their trip when they left Ontario here yesterday. Two days were spent in the heart of the woods, where they saw conditions and difficulties in the forests.

Saturday afternoon they inspected the plant of the Abitibi Pulp and Paper Company at Iroquois Falls and made a trip on a logging train into the heart of the pulp wood stands. They left Iroquois Falls for Minaki. J. H. Evans, Deputy Minister of Agriculture and others of the party here and accompanied them to Winnipeg.

The holders of existing debentures in the Northfleet Paper mill are being asked to express their opinions on a proposal to exchange their holdings for a new issue of 7½ per cent funding debenture stock. If they agree £75,000 additional preference capital will be issued.

Technical Section

REVIEW OF RECENT LITERATURE

SULPHITE PROCESS

E-4 Recovery of Sulphurous Acid and Heat from Sulphite Digesters. H. CLEMM and C.HANGLEITER. Eng. pat. 167,171; U.S. pat 1,429,128, Sept. 12, 1922.— Relief from sulphite digesters is passed without cooling into raw sulphite liquor contained in a closed lead lined tank capable of withstanding pressure. The liquor, when sufficiently enriched with sulphurous acid and heated to a temperature of 90°C. or more is transferred directly to the digester freshly charged with wood.-A.P.-C.

WOOD ROOM APPARATUS

C-7 Barker. E. B. WHALLEY. U. S. pat. 1,440,042. Dec. 26, 1922. — The bark is removed endwise or longitudinally instead of circumferentially as usual; a separate device may first be used to remove a narrow ring of bark from one end of the log, and the latter is then mounted on rollers and given a longitudinal, and if necessary a rotary motion at a suitable speed through headstocks in which are arranged radially disposed rings or chisels or paring tools. The tools have a square face to bear on the surface of the log without cutting the wood. They may be drawn outwardly simultaneously by a cam and lever device to enlarge the opening for the insertion of the end of the log with the bark removed from the extremity. Springs, one for each tool, then bring the latter to bear against the log, and as it is advanced through the headstock the tools strip off the bark longitudinally. The rings of tools are arranged in series and each tool engages a different portion of the circumference of the log, so that collectively they cover the entire circumference.-A.P.-C.

C-7 C-8 Wood Preparation. C. K. BOYER. **Paper Trade J.** 76, No. 21, 47-48 (May 24, 1923). The respective advantages and disadvantages of dry and wet barking are outlined. The author found that best results were obtained by first passing the wood through a drum operating dry, in which it was 90% barked with a minimum of sorting back, and then through a drum operating wet from which it came practically all barked and washed clean. The merits of this procedure are described. The care to be given chipper equipment to obtain uniform chips with a minimum amount of sawdust and oversize chips is dwelt upon.-A.P.-C.

SULPHITE WASTE LIQUORS

E-1 The Determination of Bases in Fresh Sulphite Liquors made from Dolomite. RUDOLF SIEBER. **Papierfabr.** 21, 235-236 (May 6, 1923). The usual gravimetric methods for determining calcium and magnesium oxides in fresh sulphite liquors made from dolomite are hardly suitable as rapid control tests. A volumetric method is described in which the magnesium is determined by adding 20-50 cc. N/10 barium hydroxide solution to a 10 or 20 cc. sample of the neutralized liquor diluted to 200 cc.; the precipitated magnesium hydroxide is removed by filtration and the excess barium hydroxide titrated with N/10 HCl. 1 cc of N/10 $Ba(OH)_2$ corresponds to 0.002 g. MgO. Calcium is determined by precipitating the oxalate and titrating with permanganate. Tests comparing the volumetric with the gravimetric methods gave close agreement.-J.L.P.

E-2 Waterproofing Material from Sulphite Waste Liquor, and Process for Making Same. H. H. HURT. U. S. pat. 1,400,164, Dec. 13, 1921. — The composition consists of sulphite waste liquor freed from lime, with sodium sulphate and an insoluble soap.-A.P.-C.

E-2 Evaporating Sulphite Waste Liquor. H. A. E. NILSSON. U. S. pat. 1,440,026, Dec. 27, 1922. — The liquor is evaporated in an apparatus in which the compression of the vapors is utilized for heating the evaporator and the vapors are scrubbed with milk of lime or otherwise treated to eliminate acid before being brought into contact with metal heating elements which might be damaged by acid.-A.P.-C.

E-2 Tanning Material from Sulphite Waste Liquor. C. SORGER. U. S. pat. 1,414,312, April 25, 1922.— Concentrated sulphite waste liquor is treated with sufficient of an alkali bisulphate to precipitate the whole of the ligninsulphonic acid as the alkali salt.-A.P.-C.

E-2Tanning Material from Sulphite Waste Liquor. A. ROMER. U. S. pat. 1,441,243, Jan. 9, 1923. — Same as Can. pat. 220,399. See **Pulp and Paper** 20, 791 (Sept. 14, 1922). **Paper Trade J.** 75, No. 12, 50 (Sept. 21, 1922).-A.P.-C.

E-2 Treatment of Sulphite Waste Liquor. J. S. ROBESON. U. S. pat. 1,445,603, Feb. 13, 1923. — The liquor is sprayed into air to effect oxidation and some evaporation with removal of free sulphur dioxide. Calcined magnesite or other suitable reagent is then added to neutralize acidity and the liquors, freed from any precipitate which forms, is evaporated to a specific gravity of 1.26 or to dryness. This treatment produces a product of strong adhesive properties, free from such alterations as may occur from undue heating, and adapted for fermentation to produce alcohol. -A.P.-C.

E-2 Sulphite Waste Liquor Emulsions for Core Binders, Etc. K. P. McELROY, assignor to Robeson Process Co. U. S. pat. 1,444,844, Feb. 13, 1923. — A small amount of soda sludge from petroleum refining is used with sulphite waste liquor to emulsify linseed oil or other oils for core, road, or briquette binders. -A.P.-C.

E-2 F-4 Recovering Solids from Waste Pulp Liquors W. H. DICKERSON. U. S. pat. 1,396,028, Nov. 8, 1921. Hot sulphite or soda waste liquors are permitted to undergo self-evaporation, additional water is removed by freezing out and the remaining liquor is dried by spraying into hot gases to obtain material adapted for subsequent fermentation.-A.P.-C.

E-2 Solid Constituents of Sulphite Waste Liquor. W. H. DICKERSON. U. S. pat. 1,297,039, Nov. 15, 1921.— Spherical solid particles glazed upon their surfaces are prepared by spraying the concentrated liquor into a hot gas.-A.P.-C.

E-2 Fertilizer from Sulphite Waste Liquor. Zellstoffabrik Waldhof. Eng. pat. 179,151, Apr. 1, 1922. —

Sulphite waste liquor (preferably concentrated) is treated with burnt lime or magnesia in quantity sufficient to absorb the whole of the water content. The initial temperature of the liquor is preferably raised to 60° to 70°C., and peat dust may be incorporated with the lime. Bacterial nutrients such as phosphates potassium salts, or nitrates, may be added in the course of manufacture or during the grinding of the product. A.P.-C.

A-4 Mitscherlich Pulp. ARTHUR S. M. KLEIN. **Paper Trade J.** 76, No. 20, 41-45 (May 17, 1923). — A discussion of quality of wood, length and thickness of chips, acid strength, temperature and time of cooking, and steam consumption in cooking and drying Mitscherlich pulp, from the standpoint of European, and more particularly Scandinavian practice, contrasting it with American practice.-A.P.-C.

E-2 Utilization of Sulphite Waste Liquor. P. A. PAULSON, U.S. Patent 1,393,241, Oct. 11, 1921. Same as Can. pat. 221,600 Aug. 1, 1922, — See **Pulp and Paper** 20, 791 (Sept. 14, 1922) **Paper Trade J.** 75, No. 12, 50 (Sept. 21, 1922).-A.P.-C.

E-2 Utilizing Concentrated Sulphite Waste Liquor. L. STEIN. Eng. pat. 153,546, Jan. 5, 1921. — Compositions suitable for various industrial purposes are prepared by mixing concentrated sulphite waste liquor of 34° to 37° Bé. (Sp. gr. 1.31 to 1.35) with up to 10% by weight of water insoluble resins of fatty or mineral oils dissolved in up to 20% of a volatile inert organic liquid such as benzine, benzene, carbon tetrachloride, etc. Such compositions form milky colloidal solutions when mixed with water.-A.P.-C.

E-2 Decolorizing Concentrated Sulphite Waste Liquor. R. ADLER. Eng. pat. 165,788, June 29, 1921. Sulphite waste liquor, or the residue left after the manufacture of alcohol therefrom, is heated under a pressure of several atmospheres with an alkaline-earth hydroxide or with a neutral salt in order to precipitate the organic matter. The precipitate is pressed and dissolved in an alkaline solution, filtered if necessary, and the filtrate dried and carbonized. The product is suspended in water and carbon dioxide is passed into the suspension to convert the sulphides present into carbonates. The resulting alkali carbonate solution is separated from the charcoal for further use. Alternatively, the charcoal may be washed with water before the conversion of sulphides into carbonates.-A.P.-C.

E-2 Tanning Composition from Sulphite Waste Liquor. J. K. TULLIS. U. S. pat. 1,430,477, Sept. 26, 1922. — A solution of commercial quebracho extract is made with unconcentrated sulphite waste liquor, which is acidulated with an aromatic sulphonic acid, e.g., cresol or napthol sulphonic acid.-A.P.-C.

E-2 Sulphite Waste Liquors. I. I. CHRAMTSOFF BUMAZHNAIA PROMYSHLENOST, I, Nos. 2-3, 237-277 (Sept.-Dec. 1922). The effect of sulphite waste liquors on the river water when used in boilers at the Suchon mill is discussed and analyses are given. Shutter's experiment of feeding domestic animals food containing concentrations of sulphite liquors is considered. The harmlessness of sulphite liquors is due to the rapid oxidation and neutralization of the sulphite compounds. The cooking liquors are germicidal and are harmful life. However, Lehmann's experiment has shown that sulphite cooking liquors have no bad effects on the fish in the river. The economy of evaporation of the waste liquors is discussed. The difficulty of evaporation is caused by the high viscosity of the liquors at moderate concentration.-M.L.C.

E-4 Sulphite Liquor Preparation. D. B. DAVIES and E. P. STRONG. U.S. pat. 1,424, 883, Aug. 8, 1922.— Sulphite liquor is led from a storage tank and returned from a circulation circuit so that it is discharged beneath the surface of the liquor in the tank after aspiration of sulphur dioxide in the circulating liquor. A.P.-C.

E-4 Sulphurous Acid from Sulphates. Metallbank und Metallurgische Gesellschaft. Ger. pat. 372,833. **Papierfabr.** 21, 279-280 (June 3, 1923). The furnace charge, consisting of a mixture of sulphates and combustible material according to Ger. pat. 227,175, is preheated by the waste heat from the combustion chamber. -J.L.P.

E-5 Liberating Cellulosic Fibers. G. A. RICHTER. U.S. pat. 1,427,125, Aug. 29, 1922. Fiber is obtained from raw material such as wood by cooking with a solution containing sulphur dioxide and a soluble sulphate such as sodium sulphate.-A.P.-C.

E-5 Filling Digesters with Heated Sulphite Liquors. H. CLEMM. Eng. pat. 168,866, July 25, 1921. — The digester is filled with hot liquor by means of a pressure pump, the digester being closed by an excess pressure valve which can be adjusted so that for any given temperature the desired quantity of sulphur dioxide is retained in the acid liquor.-A.P.-C.

E-5 F-5 Circulating Liquor in Digesters. ESCHER WYSS & Co. Eng. pat. 168,304, July 4, 1921. — Same as Fr. pat. 533,730. **Pulp and Paper,** 20, 654 (Aug. 3, 1922). **(Paper Trade J.** U. S. 6, 54 (Aug. 10, 1922). -A.P..C.

E-5 Hardening Fresh Sulphite Digester Linings. C. H. JONSSON. U. S. pat. 1,444,467, Feb. 6, 1923. Same as Can pat. 220,028. See this journal 20, 791 (Sept. 14, 1922). **(Paper Trade J.** 75, No. 12, 50 (Sept. 21, 1922). A.P.-C.

E-5 Yields in the Sulphite Process. R. DIECKMANN. **Wochbl. Papierfabr.** 54, 1241-1242 (May 5, 1923). The pneumatic packing of chips in Germany increases the pulp yield by about 8 Kg. per cu. m. of digester space; in Scandinavia, after steaming the chips and refilling the digester, the yield increases 7 to 9 kg. per cu. m. of digester space. In both cases the sulphite pulp was hard bleaching.-J.L.P.

ALKALINE PROCESS

F-1 Operating Control in Pulp Making. RUDOLF SIEBER. **Paper** 32, No. 1, 11-14 (Apr. 25, 1923). — An outline of the various control tests for sulphate, lime, green and white liquors, liquor during digestion, pulp, and lime mud from causticization, showing their importance in obtaining efficient operation. Methods are described in detail for the determination of the different sulphur compounds in the white liquor and for the analysis of the sludge from causticization.-A.-P.-C.

F-4 Recovering By-Products from Black Liquor. J. E. PLUMSTEAD assignor to Jessup & Moore Paper Co. U. S. pat. 1,442,393, Jan. 16, 1923. — The black liquor is heated to effect evaporation and incineration and the gaseous products from the heating are afterwards brought into contact with the insoluble material which remains from the extraction of the incinerated residue in order to obtain a fuel for heating the incinerating evaporator.-A.P.-C.

(Continued on page 854)

British Trade News

CANADA'S PULP POLICY

(From Our London Correspondent)

London, August 7, 1923

The Australians, when fixing their last tariffs, came to the conclusion that America had huge sums of money invested in Canadian industries. Being of that opinion — whether right, or wrong — they reduced the paper tariff for British mills and kept Canada on a list practically equal to that of a foreign nation. When interrogated as to why a preference was not given to Canada, an integral part of the Empire, Australians retorted that American money was invested in Canadian industries. Some time ago I wrote exposing the fallacy of the Australians' contention and pointed out to them that more foreigners were engaged in the British paper industry — selling, buying, and making — than was the case in Canada. It is to be hoped the forthcoming Imperial conference will settle things.

Now we have another side to the policy of allowing American money to be sunk in Canada. It comes from the pulp side and the British papers and trade journals have each received a copy of a letter written by Mr. N. Grattan Doyle, M.P. — Irishmen will recognize the name — who is not pleased with the Canadian policy of selling pulpwood to the U. S. It is an interesting document in view of the depleted resources of the U. S. and in parts of Canada. Raitt, noted Indian forestry research, stepped in some weeks ago and practically told buyers of pulpwood that in view of the world's shortage the great resources of India should be considered.

What ought to be Canada's Policy?

That is the question Mr. Grattan Doyle asks. He refers to the sale of pulpwood recently announced in the *Pulp and Paper Magazine* as having taken place in Nova Scotia and the letter shows the feeling that is existing amongst some Parliamentarians and the British public generally. There are arguments for and against the policy. For instance, if I was a Nova Scotia man I would say "well, if Britishers will not invest some of the millions they are hoarding up in London in the land of my country, I must sell to the next best customers — you cannot have it both ways". That is one reply for the British speculator and, no doubt, there are arguments on the other side.

"I feel that your readers will be interested in a piece of news which reaches me from Canada," writes Mr. Doyle. "It seems that an American firm has just purchased, in the province of Nova Scotia, between six and seven thousand acres of virgin forest suitable for the manufacture of paperpulp. This eagerness to acquire this land is manifest in the unusually high price which they have paid for it — from 35 to 40 dollars an acre.

"The incident has I think a significance both for Anglo-American relations and for the future of the British Empire. Not long ago the New York Bank of Commerce reported that the present supplies of American pulp would be exhausted within 30 years. America is, therefore, turning to Canada for her supplies and that Dominion is easily first amongst the countries which already export to the United States 40 per cent* of the wood pulp used there. But Canada not only possesses vast areas of timber available for pulp; it is not improbable that there will be added to these resources the straw from her 22,000,000 acres of wheatlands in the Prairie Provinces, which by a new process about to be tested in Kent, (England), may at no distant date be transformed on the spot into thousands of tons of pulp for high grade papers.

"This being so, what ought to be Canada's pulp policy towards the United States? At present she places an embargo (some provinces require wood from Crown lands to be partly manufactured in Canada. —Ed.) upon the export of timber for conversion into pulp in American mills and the natural result has been the setting up of American-owned mills in Canada. It is true both that the proprietors of these mills pay taxes to the Dominion and that thus far they have employed Canadian labor in running them. The question which arises is whether that process of peaceful penetration can go on indefinitely. In other words, is it quite politic that these considerable resources of ours should be owned and controlled by American citizens instead of being retained by Canadians for the Empire! The matter is one which with propriety might well be considered at the forthcoming Imperial Conference."

A Neglected Policy

This letter was written in the British House of Commons and if there are any more sales of pulpwood to America one may assume that pressure amongst the parliamentarians will be bought to bear to stop them directly, or indirectly. Of course American efforts in the past in the direction of re-afforestation are well-known in England. The feeling is that much time was devoted to money-making instead of pursuing a forestry policy equal say to that of Sweden. It is the want of this policy that creates a feeling that Americans should not be allowed to control pulp resources in Nova Scotia, or in any part of Canada.

A lot has been written lately on the forest policy of Scandinavia, which is pretty ripe in the minds of the British public, and this adds to the interest of the question raised by Mr. Doyle. Indeed, this week I was discussing the question of forestry with an Englishman who has returned from Finland, after a four months' visit. He told me that things were settling down again and the system of handling pulpwood and timber was one of the best. Farther, he told me that owing to some differences in Russia many of the pulpwood resources were being destroyed to prevent them falling into the hands of undesirables.

Russian Output

Figures or facts about Russia are difficult to get accurately. The latest, from what is supposed to be an official source, state some exports for May. They are greater when compared with March and April, and are as follows:— Paper 2,700 tons; cardboard 150 tons; cellulose 1,500 tons; wood pulp 700 tons. The cellulose factories in Russia are being reconstructed and repaired and during May the workers employed increased from 8,682 to 9,006. All the factories have a sufficient supply of fuel and raw materials to assure normal working conditions for at least six months.

Company Reports

James Hawes and Co., Ltd., have purchased the Syston mill, near Leicester, lately owned by W. H. Baldwin and Son, Ltd., and will carry on the manufacture of leather boards.

The Pulp Market

Conditions remain unchanged. The autumn, according to the opinions of sellers, has something good in store and a sharp and quick revival is being looked for. Groundwood is still in a strong position. Scandinavians report that their stocks are lower now than was the case this time last year.

* This is misleading. "The United States import an average of less than 20 per cent of the pulpwood consumed there."—Ed.

PULP AND PAPER NEWS

Mr. G. C. Piche, chief forester of the Province of Quebec, is among the incorporators of the Fire Prevention League of the Province of Quebec Limited. The chief purposes of the League are the prevention of fires either on private or public property; to spread propaganda and to circulate literature and information, having in view the prevention of fires; and the establishment in towns and districts, clubs which will assist in the work of educating the public.

Seven members of the staff of the Riordon Company, Limited, were competitors in the Montreal lumbermen's golf tournament held on August 15 at the Beaconsfield links. These were Messrs. A. Fenton, F. M. Benson, Roy Campbell, H. J. Webb, A. D. Huff, E. R. L. Henry-Anderson and J. L. G. Brown. The first prize, for the best net score was won by Mr. E. R. L. Henry-Anderson, with a net score of 77 after a tie with Mr. Arthur H. Campbell. Mr. Henry-Anderson is a well known golfer and the winner of many cups.

The Anglo Newfoundland Development Company are largely extending their operations. A mill at Bishop's Falls, with the timber limits, has been purchased and a new newsprint machine is to be installed, which will be running by the fall of 1924, producing 25,000 tons per annum. This added to the production at Grand Falls will give an output of 75,000 tons. The company has also acquired a two-thirds interest in the new sulphite mill at Alexander Bay, 90 miles from Grand Mills; this will produce 25,000 tons per annum. The company now owns or controls 6,300 square miles of timber limits.

Sir Glyn West, president of the Sir W. G. Armstrong Whitworth Company Limited, London, England, was a visitor to Montreal last week en route to Newfoundland in connection with the large pulp and paper plant being constructed there by the company. He also came to Canada in relation to the plant for making paper machinery at Longueuil, acquired by Charles Walmsley & Co., (Canada) Limited, particulars of which were given in our issue of August 9. This company is controlled by the Sir W. G. Armstrong-Whitworth Co.

During the fiscal year ended June 30 last, the receipts of the Lands & Forests Department of the Province of Quebec totalled $3,643,407 and the expenses $870,544.

Mr. J. Patton of the Meade Patton Company, New York, was in Montreal last week.

It was reported that the Edwards Lumber & Pulp Company, which acquired the property of the Colonial Lumber Company, Pembroke, Ontario, would construct a pulp and paper mill. It is now understood that the directors have decided not to go ahead with the project, at any rate for the present.

In the official statement regarding the suspension of payment by the Home Bank of Canada it is said that among the bad and doubtful loans is one to a large pulp and paper company which has been operating near Vancouver, B. C., but which, for some time, has been closed down.

The Hon. Thomas A. Low, the new minister of Trade and Commerce, is a successful lumber merchant and manufacturer of Renfrew, Ontario.

A branch of the Engineering Institute of Canada, has been established at Kenogami, P. Q. A party of officers of the Institute inaugurated the branch, the meeting being held at the staff house of Price Bros. at Kenogami; some of the members are employed by Price Bros. Sir William Price was present at the meeting, and in promising the co-operation of his firm, alluded to the good work being done by the engineering profession in developing new districts of the province, especially in relation to water and electric power, and also the pulp and paper industries. The Montreal delegates afterward made a tour of the pulp and paper mills in the district, inspecting the work on the Saguenay and in the Lake St. John region. The party were the guests of Price Brothers.

A new 70 foot steel look-out tower for forest fire protection purposes has been completed near St. Quentin, Restigouche, N. B. Another has been erected on Mount Carleton, Gloucester County, with direct communication with the town of Bathurst, and a third will be erected on Blue Mountain, Restigouche, at the head of the Benjamin River.

Mr. A. Mackenzie Livingstone, of the British firm of Livingstone Page & Co., is now on a visit to Canada, and last week called on the trade in Montreal. His firm are paper makers' agents and represent Edward Collins and Sons and Henry Leigh Slater, Ltd. Mr. Livingstone is trying to find a market for esparto papers, tin foil papers, and fancy wrapping papers.

Mr. A. E. Tweedell, of Price Bros., has been elected a member of the recently organized Board of Trade at Matane, P. Q. Matane is the centre of an extensive pulpwood area.

Sir Frederick Becker and some of his associates in the Chicoutimi Pulp Company have been on a visit to the mill at Chicoutimi and to the limits on the Peribonka.

Mr. W. Innes, Montreal representative of the Interlake Tissue Mills, Limited, has returned from a trip to the Saguenay.

Addressing a meeting at Sault Ste. Marie, Ont., a few days ago, Hon. James Lyons, the new Minister of Lands and Forests in the Ontario Government, declared that his policy in regard to forests would be preservation and reforestation. He said that he was strongly interested in the development of Northern Ontario and that there would be no more wholesale selling of large timber limits. With this in view he forecasted a general survey of the timber survey of the north country.

Plans are on foot to make the Ontario provincial exhibit at the Canadian National Exhibition in Toronto this year one of the most outstanding attractions for foreign visitors. This year a huge floor space has been secured and the Northland exhibits will be displayed by districts. Wood pulp and all allied activities will have products and processes shown and various paper industries will also be represented.

Bushmen and camp men are starting a general rush for the Spanish River Pulp and Paper Mills' camps up the Algoma Central Railway and other Northland sections. W. R. McKibbon, of the woods department

of the company, states that the company is engaging all the men that could be secured and that a shortage of labor is in sight.

Wilfrid Belanger, aged 17, was rather seriously injured at Sault Ste. Marie, Ont., a few days ago, when he was struck by an automobile driven by Col. P. B. Wilson, of the Spanish River Pulp and Paper Mills, Limited. His collar bone and nose were broken.

The Lawrason-Doughty Company, manufacturers of paper boxes, which for the past twelve years has occupied premises on Church Street, have moved into their new plant at No. 11 Hamilton Street, Toronto. The company have erected a compact one-storey factory and the plans provide for two additional storeys later should business warrant. Considerable extra equipment has been added and the firm report a growing demand for their products.

The Toronto Carton Club held one of its regular meetings at the King Edward Hotel on August 7 and, following a luncheon, matters of interest to the trade were informally discussed. A guest of the Club was R. F. Moncrieff, manager of the Frontenac Paper Box Company, Kingston, Ont., which is a branch of the Fisher Manufacturing Company, Sherborne Street, Toronto.

J. Northey of the Telfer Manufacturing Company, Toronto, has returned after a pleasant holiday spent in Muskoka.

Centre Island, Toronto, was the scene of a regular field day for the paper box industry recently when three different firms held their annual picnics there. These were the Fielder Paper Box Company and the Automatic Paper Box Company, Toronto, and the Hamilton Paper Box Company, Hamilton, Ont. There was an intermingling of the employees of the various firms in sports and contests and the afternoon proved a thoroughly enjoyable one for all the paper box makers.

W. P. Bennett, President of the Rudd Paper Box Company, Limited, Toronto, has returned from an enjoyable holiday at Frenchman's Bay, Ont.

Charles V. Syrett, of the Victoria Paper and Twine Company, Limited, has been spending a few holidays up at Franklin Camp. That his son "Wallie" takes after his dad in his keenness for fishing is indicated by the fact that the young chap landed one of the biggest bass that has been caught at the camp this summer. It weighed a little over four pounds.

A. T. Brown, of E. Pullin, rag and paper stocks, and W. B. Christie, of the Hinde & Dauch Paper Company of Canada, Limited, Toronto, have returned from a motor trip through New York State and adjoining territory in the course of which they visited a number of the paper mills. They were accompanied on the trip by their families.

O. H. Moore, General Manager of the Hinde & Dauch Paper Company of Canada, Limited, Toronto, is spending a few weeks vacation in the Muskoka region.

The Dominion Embossing Company, Jarvis Street, Toronto, which recently went into liquidation, was bought in by Jess Jaffe for $9,175. A number of Toronto paper houses are creditors of the firm.

An experiment which will be watched with interest by lumbermen of Northern Ontario is being undertaken by Shepherd & Morse of Ottawa. Instead of waiting for the drive they are bringing their logs from Kippawa to Ottawa by train loading some ten cars a day.

Allan Toy, of the Canada Paper Company's Toronto office is spending his holidays in the Georgian Bay district.

Harvey G. Ellis, of the city sales staff of the Barber, Ellis Company, Toronto, has gone on a trip to the Pacific Coast.

The Interlake Tissue Mills have secured space at the National Exhibition in Toronto and are arranging for a novel display of new uses of crepe tissues.

Peter Christie, of the wrapping paper department of the John Martin Paper Company, Winnipeg, was a business visitor in Toronto last week.

I. H. Weldon, President of the Provincial Paper Mills, Limited, Toronto sailed for home from England on the "Empress of Britain" on August 15.

NEW BRUNSWICK NEWS

The Buckley Estate of Newcastle which sued fire insurance concerns for $112,000, has received a verdict for $24,800. The fire insurance companies refused to pay the $112,000 and the case was brought to court. The plaintiff estate claimed the lumber and pulpwood destroyed by fire reached the valuation named. Mr. Justice Chandler of St. John after an extended hearing which included sessions in different parts of New Brunswick, gave judgment for $24,800. He has reserved decision as to costs. The costs will be heavy owing to the unusually large number of lawyers retained by the different parties in the suit. The Liverpool, London and Globe Fire Insurance Company, was ordered to pay one thirteenth of the sum awarded. The Buckley Estate may appeal the verdict, judging from present indications.

Hugh Chisholm president of the Nashwaak Pulp and Paper Company of St. John, N.B., is now in Nova Scotia and New Brunswick. The visit of Mr. Chisholm is said to be in connection with a deal in which the Nashwaak interests are involved. Dame Rumor even goes so far as to say, the Nashwaak group will take over the Clarke mill at Bear River and some pulpwood areas in Nova Scotia also.

More pulp has been exported from Bay of Fundy ports during the present summer than ever before. Development of Digby as a pulp exportation centre has resulted in regular calls to that part. In some instances the steamers bound for English ports load part of the cargo at Digby and the balance at St. John, crossing the bay to secure the remainder. A strike of longshoremen at the port of Chatham has somewhat interfered with shipments of pulp from that port by steamer.

The slash burning edict of the New Brunswick government will enter into effect this fall. All settlers desiring to burn slash are asked to start the slash fires in September, October and November. The rule is expected to act as a substantial preventive for forest fires by the department of lands and mines. Spring slash burning has been responsible for some of the most devastating forest fires in the past.

FARM PROPERTY VALUE IN N. S.

Figures compiled by the Dominion Bureau of Statistics show that the value of farm property in Nova Scotia has increased by 18 per cent. in the ten years from 1911 to 1921. The value of farm property in Nova Scotia in 1921 was $136,841,593, as against $115,974,892 in 1911. Farm acreage was 4,723,550 in 1921, as against 5,260,455 acres in 1911, and 5,080,901 acres in 1901.

UNITED STATES NOTES

Dr. Arthur D. Little, of Cambridge, Mass., past president of the American Chemical Society, sees in millions of acres of cut-over yellow pine lands in the South forest reserves sufficient to maintain a big paper industry provided the proper research facilities are granted to chemists to adapt the second growth material to the needs of the industries. Commenting on the statement prepared by Col. W. B. Greeley, chief of the United States Forestry Service, for the guidance of the member organizations of the Federated American Engineering Societies, Mr. Little asserts the necessity of research, declaring that huge quantities of cord wood now wasted could be made to yield by-products with profit. "The proposed and perhaps impending Canadian embargo on pulpwood," said Mr. Little, "invests with new and added interest our great reserves of Alaskan spruce, which, if developed wisely, should enable us to supply the world with news print paper for many years to come. Of more immediate interest, however, are the supplies of gum woods, tupelo and pine available in our Southern States in amounts sufficient to support an extensive and diversified paper industry. The permanency of a paper industry when once established in the South, can be insured by reforestation with rapidly growing trees like loblolly pine, and even more securely in the Gulf States by plantings of bamboo, which is incomparably more productive than any wood, and which yields a fiber ideal for papermaking."

A factory for the manufacturing of corrugated boxes, said to be the first to be established in the Southwest, will be opened at Love Field, Dallas, Texas, on September 1, according to an announcement by Hugo Schoellkopf, general chairman of the Dallas Manufacturers' Association. J. H. Oppenheim of New Orleans, head of the new enterprise, which is capitalized at $100,000, already is in Dallas superintending the installation of machinery. The new industry will be known as the Texas Corrugated Box Company.

A Richmond Va., firm is planning to manufacture paper raincoats to retail at 25 cents each. The garments are to be made from waterproof paper in only four sizes —men's 46, women's 36, and the other two for misses and children. A capelike arrangement will obviate the necessity for sleeves and there will be no distinction in styles between the sexes. All garments will be grey. They will be packed in sealed envelopes, 5 x 7 inches, thereby making it possible to carry the raincoat in the pocket. According to the manufacturer, the coats have been tried out in a rainy spell and found to weather the elements most satisfactorily. The initial capacity of the manufacturing plant will be 1,000 garments a day, the output to be increased with an expected rising demand.

At a hearing last week in Washington before the Tariff Commission, which is investigating duties on casein under flexible provisions of the tariff law, manufacturers of coated paper declared a reduction in duty is imperative. Spokesmen for dairy interests were also on hand to insist that the present duty of 2 1-2 cents per pound is needed to give proper protection to this dairy product. Martin Cantine, chairman of a committee of coated paper manufacturers, was the chief spokesman for the paper industry. Mr. Cantine said that the effect of an increase in the price of coated paper has been to force a number of publishers to use other varieties of paper as a substitute. "The industry has been very hard hit," 'said Mr. Cantine, "We believe the farmer should have protection, but we believe that there should be such a thing as live and let live. Coated paper is a very highly competitive article and there are other papers which can be used in its stead if the price goes too high." Mr. Cantine added that the paper manufacturers have bought casein for as low as six and one-half cents a pound and that in the spring of 1922 the price was eight cents a pound. Following the enactment of the present tariff law the price advanced as high as 30 cents per pound, but has since dropped to 16 1-2 cents per pound.

Planters in Hawaii are turning the waste fibers of sugar cane over to a new use. These fibers were discarded as being of no value until some practical and scientific minded person conceived the idea of utilizing them in manufacturing the paper which is being used by pineapple planters for protecting plants from weeds. Broad strips of this paper are stretched over the soil where the pineapples are planted and it is claimed that an increased production of about 50 per cent. has been obtained as a result. The fruit is planted in loose soil which is likewise very conducive to the growth of weeds. It has been found that the paper smothers the weeds and retains the moisture in the soil. The pineapple plants will grow up through the paper.

The Paper Industries Exchange, the first industrial exchange in the country, organized by the Chicago Board of Trade primarily for the elimination of waste in the paper industries, opened its floor to trading last week. According to John R. Mauff, Executive Vice President of the Board of Trade, who organized it, the purposes of the exchange are to provide a trading place for members, to promote uniformity of trade customs, to provide expeditious settlement of trade disputes on principles of justice, to promote co-operation between producers and buyers in standardization of products and to provide an efficient method of inspection. It is also the aim of the exchange to improve labor conditions and relations between labor and industry and to build up a demand in foreign markets for American products. Market reports and other information will be gathered and disseminated. It is planned to open branch exchanges in New York and San Francisco.

The California Redwood Association is putting into effect reforestation measures by which it is hoped the giant redwood trees will be saved from entire extinction.

Ernest R. Evans, Vice Consul in Mexico, has made an analysis of statistics during the first 4 months of 1923, as compared with the previous two years, which would seem to warrant the conclusion that the rapid development of German paper sales in Mexico during the months of January to April of this year have been realized at the expense of American paper exporters. The imports of paper from Germany are said to be mainly of a cheap quality, and this report seems to be confirmed by the customs valuation of 13 cents per kilo during the first 4 months of 1923, compared with 32 cents in 1922 and 20 cents in 1909-10. Imports during 1923 and the previous two years averaged approximately 30 cents, an increase of 8 cents per kilo over 1909-10.

F-5 H-0 Production of Pulp. Zellstofffabrik Waldhof. Aus. pat. 866,923. **Wochbl. Papierfabr.** 54, 1371 (May 19, 1923). Cellulosic material is treated at the usual or at a moderately elevated temperature with hypochlorite solutions, thereby oxidizing the lignin which can be dissolved in alkalies. At the same time, or later, the material is subjected to the action of alkalies, sulphur mixtures of these substances.-J.L.P.

F-5 H-0 A New Process for the Production of Pulp. J. F. CLERE. **Schweizerisch Technikerzeitung** 20, No. 9 (Mar. 1, 1923); **Papierfabr.** 21, 201-203 (Apr. 15, 1923). A description is given of the Devains chlorination process which consists essentially of the following phases: (1) cooking of the raw material in an alkaline solution; (2) chlorination of the resulting material, using chlorine hydrate — $Cl_2.8H_2O$; (3) solution of the chlorinated products in an alkaline solution; and (4) bleaching of the half-stuff in a chloride of lime solution. The chemicals, with the exception of lime, are prepared by the electrolysis of sodium chloride. A yield, 90-95% of the cellulose in the raw material, of superior pulp is obtained. The process has given good results with different kinds of straw, as esparto and bamboo.-J.L.P.

F-5 Chemistry of Pulps; A Comparison of the Chemical Changes of Jack Pine and Aspen Woods Cooked by the Soda Process. MARK W. BRAY and T. M ANDREWS. **Paper Trade J.** 76, No. 19, 49-51 (May 10, 1923). — The chemical changes which take place in jack pine and in aspen wood have been studied. Under the conditions of the experiments the rate of the chemical changes taking place in the woods was greatest during the initial part of the cook. At the second hour of cooking or after one hour at maximum pressure the process is practically complete. Cellulose begins to decompose very appreciably one-half hour before maximum pressure has been reached at a temperature of 110°C. During the early stages of cooking, cellulose decomposes at a greater rate than does lignin Later on in the cook the rate of lignin removal is greater than that of cellulose. The pentosan content of aspen is reduced rapidly during the early stages of the cooking process to a constant value of 7.7%. The pentosans are present in the wood in at least two forms; one readily removed from the cellulose nucleus by hydrolysis and the other held in a more stable combination with the cellulose.-A.P.-C.

F-0 Method for the Manufacture of Paper Pulp and Apparatus Therefor. V. BERNOT and R. FOURNIER. Eng. pat. 178,962, Feb. 1, 1921. — Same as Fr. pat 523, 871. See **Pulp and Paper** 20, 462, (June 1, 1922). **Paper Trade J.** 74, No. 23, 95 (June 8, 1923).-A.P.-C.

F-0 Dissolving Incrustants from Chlorinated Cellulose Materials. A. R. DEVAINS. Eng. pat. 189,561, Sept. 5, 1921. After chlorination of cellulosic materials containing lignin, it is washed by means of alkaline liquors which have previously been used for lixiviation of cellulosic material. Organic products are thereby removed from the chlorinated cellulose without imparting to it a reddish tint.-A.P.-C.

F-0 Manufacture of Pulp from Peat. A. L. BURLIN. Eng. pat. 168,355, July 3, 1920. — Strong fibrous peat is freed from foreign substances, boiled in a cast iron boiler for 2 hr. with a 0.02 to 2% solution of caustic soda, washed, drained, and then treated for half an hour with a 2% calcium hypochlorite solution. A small quantity of sodium bicarbonate is added, the mass is stirred, acidified, preferably with sulphuric acid, and washed with cold water till neutral. The material if filter-pressed and may be treated in a paper mill for the manufacture of light brown paper, which can be dyed any color, preferably by means of aniline dyes. The filter cakes may be bleached With finer fibrous peat a 1 to 10% solution of washing soda is substituted for caustic soda. A further bleaching operation for 30 minutes may be necessary.-A.P.-C.

F-0. — Alkaline Processes of Pulp Manufacture and Equipment. Continuous Cooking Under Pressure of Vegetable Materials. RAYMOND FOURNIER. **Papeterie** 45, 270-274 (March 25, 1923); **Paper** 32, No. 5, 5-6, 2 (May 23, 1923). — The author briefly discusses the merits of such a process and the principle on which a suitable digester could be constructed. (Compare Fournier, **Pulp and Paper** 20, 635, July 27, 1922). -A.P.-C.

F-0 Changing the Physical Nature of Pulps. ERNST BECKER and CARL G. SCHWALBE. Ger. pat. 371,-507; addition to 369,606. **Papierfabr.** 21, 198 (Apr. 8, 1923) . Instead of using alkaline earth compounds, magnesium oxide or hydroxide and water are employed at about 100°C. The solubility of the magnesium compounds are increased by adding organic or inorganic salts and acids.-J.L.P.

F-0 H-0 Chemical Pulp by the Chlorine Process. Fr. KUTTNER, EMIL SIDLER, ERNST PROFELD and MAX STEUDE. Ger. pat. 370,346. **Papierfabr.** 21, 185 (Apr. 1, 1923). The raw plant material is subjected to treatment, either before or during the chlorination. with hydrogen peroxide, oxene or ozonized air.-J.L.P.

F-0 Oxidation Process for the Manufacture of Paper Pulp. G. A. MOURLAQUE and J. J. B. PARENT. Eng. pat. 185,421, Aug. 31, 1922. — Vegetable material is transformed into pulp suitable for paper, etc., by treatment with oxygen. The divided and moistened wood, etc., is preferably placed in an autoclave and oxygen, which may be ozonized and obtained from liquid air, is led in under a pressure of 2 to 5 atmospheres for 3 to 6 hr. Alternatively, the oxygen may be generated in the autoclave by dissolving sodium peroxide in water or by the action of sulphuric acid on sodium peroxide or on barium peroxide.-A.P.-C.

STANDARDIZATION

R-0 Standardization of Fine Papers. R. E. RINDFUSZ. American Writing Paper Co. **Paper** 32, No. 1, 7-8 (Apr. 25, 1923). — A discussion of the advantages to both manufacturers and consumers of standardizing paper grades, giving a concrete example of the saving effected by such standardization in the case of the American Writing Paper Co.-A.P.-C.

BATHURST MILL IN OPERATION

Announcement has been made that the Bathurst Company Limited of Bathurst, New Brunswick is now producing newsprint. During the past winter, this Company erected a machine room large enough to accommodate two newsprint machines, each 166 in. wide, which were ordered from the Charles Walmsley Company Limited. The Company has for a number of years been producing sulphite pulp as well as sulphate, and last winter installed a groundwood mill to supply the newsprint machines. The mill is laid out very well indeed, and will no doubt be one of the leading factors in Canada's large production of newsprint paper. Angus McLean is president and general manager of the Company, Alex McLean, assistant general manager, John Ball, manager of paper production and Dr. John S. Bates in charge of technical control and research work.



CANADIAN TRADE CONDITIONS

Montreal, August 21. — Business in the Montreal district is slow. It has fallen off considerably. One may try to explain it as best he can — it may be due to the season or to general commercial conditions, or other causes, but of the existence of dullness, there is no doubt. A representative of a company with connections among printers attributes the scarcity of orders to the slackness of that industry. The printing trade is very, very quiet; collections, too, are slow, and for the moment there is a want of life to the local paper business. All trades are subject to these ebbs and flows, and for the time being the paper trade is feeling the effect of a backward movement.

There is, however, every reason to expect a revival, the position being fundamentally good. The July statement of Canadian trade indicates a considerable gain in the total business, about $29,000,000. The imports were $77,000,000 against a little less than $61,000,000 in July, 1922; while the exports were nearly $83,000,000 as compared with something over $70,000,000 in July of last year. The important part which pulp and paper plays in our exports is again illustrated by the July figures. The chief increase in our total sales was in this department. For the four months of the fiscal year, the exports of Canadian wood products and paper totalled just over $90,000,000, an increase of $24,000,000 as compared with the corresponding period in 1922.

The demand for fine papers has declined, while orders for toilets and tissues are fairly good. Wrapping papers are in moderate request. The board mills are quiet, but there is a little more activity than was noticeable for a month or two, and the outlook is stated to be favorable. Competition has been very keen, and the recent reduction in prices was due to the aggressiveness in Canada of American manufacturers.

There is no change to report in the newsprint situation. The production is keeping up in good shape, although the demand is a little less owing to seasonal conditions. There are reports of still further developments in the way of new mills. The schemes are still in their early stages, but if they materialise, the output in the Province of Quebec will be substantially increased. The concerns referred to are able to secure financial backing, some of it being from across the border. How far the threatened embargo has influenced the tentative plans it is impossible to say, but there can be little doubt that if it should go into effect, other companies will construct mills here.

In the pulp division sulphite is moving slowly. Groundwood however, is in active demand and prices are very firm, there being comparatively little on the market. Bleached sulphite which has been quiet for some time, is now being bought a little more freely. The stocks on hand in Canada are light.

ONTARIO MARKET NEWS

Although business generally in the pulp and paper industry in Ontario is still somewhat dull there have been signs of increased activity in a number of individual lines which appear to indicate a gradual return to better conditions. A slight improvement is noted in sales of wrapping paper and paper bags and the printing trade, although still quiet, is using a little more paper than it has absorbed during the early summer. Book paper mills and distributers of the product are none too active just now. While publication firms are using fair quantities of book the fact remains that the catalogue trade is dull, which affects consumption of book paper to a considerable extent. On the other hand coated paper mills report a fair volume of business. Newsprint continues unusually strong. All of the mills are busy and many of them are making records as to production. Some of the Ontario jobbers are inclined to the opinion that we have not yet reached the stage where no new sources of consumption can be found. Certain American mills, as is well known, are of the opinion that the present demand for newsprint will soon fall off, but that view is contrary to the one generally held here. There is every indication that the present satisfactory demand will be maintained throughout the year. Prices of paper generally are unchanged although one or two slight adjustments have been put into effect recently.

PULP — Practically all lines of pulp continue to show a stiffening tendency and while there has been no advance in prices they have remained firm. While the manufacturing mills report a fair demand it would seem to be a fact that the paper mills are only buying from hand to mouth and that none of them are laying in heavy stocks. According to one big buyer of pulp, imports just now are very light and there is practically no spot stuff on the market. Groundwood continues to be quoted at around $38.00 and prices of chemical pulps remain unchanged.

COATED PAPER.— A slight readjustment of prices has been put into effect with a view to the prevention of overlapping in the marketing of the product and paving the way for an active fall trade. The Long List price was increased on an average of a cent a pound. August business by the mills so far has exceeded that of July and it is expected that there will be a further increase as the result of the Canadian National Exhibition which always brings many buyers of paper to Toronto. Quite a number of the coated paper firms and other paper houses, in addition to making exhibits, have arranged to entertain paper industry visitors to the show. The coated paper trade reports a considerable increase in the consumption of their product as a result of the activity in paper and printing circles which always precedes the big show.

PAPER BOXES — The paper box industry is going along steadily and although a little slow in some lines

it has picked up in others. In the standard line of cartons business continues rather quiet but on the whole the industry is using a fair amount of board. Many of the carton firms are specializing on novelties and have evolved ideas which have furnished good business in lieu of that lost through the falling off in demand for the regular lines. The industry on the whole is on a satisfactory basis and it is looking forward to good fall trade.

BOX BOARD — The board mills report improved conditions. A few weeks ago many of the mills were running light but now most of them are operating at capacity. The Hinde & Dauch Company in Toronto, for instance, are running night and day and are turning out fifty tons of board daily. The Canadian Paper Board Company also are considerably busier than they were and are operating at capacity again, while there appears to be a ready market for the product.

RAG AND PAPER STOCK — Paper mills are using waste paper freely and are demanding all available supplies from the collectors. The rag market, too, is improving. There is a scarcity of cotton rags and there has been a big drop in the export from Europe of roofing rags which has had the effect of boosting the roofing rag market here. Prevailing prices are: Paper stock, No. 1 hard white shavings, $4.10; No. 1 soft white shavings, $3.40; heavy books and magazines, $1.90; ledgers and writings, $2.30; No. 1 kraft, $2.50; newspapers, $1.25; No. 1 mixed papers, $1.10; No. 1 miscellaneous $1.00; No. 2 miscellaneous, 80c; No. 1 white shirt cuttings, 12¾c; fancy shirt cuttings, 6c; canton flannels, bleached, 10½c.

NEW YORK MARKETS

New York, August 18 — (Special Correspondence) — All signs point to demand for paper of most kinds quickening. At least inquiry is steadily expanding, and it naturally follows that with consumers showing greater interest they are increasing their buying to some extent. In other words, it appears as if the usual stimulation of demand during the early fall is beginning to be felt. Publishers, printers and other large users of paper are still placing orders in a reserved way, seldom ordering other than supplies for which they have direct need, and yet, with the midsummer dullness gradually clearing, the movement of paper from mills to consuming centre is unmistakably on the rise.

The market displays a very healthy tone. So far as can be observed stocks of paper at mills, in jobbers' warehouses and in the hands of consumers are light, probably lighter than they usually are at this time of the year. Demand for several months has been confined chiefly to actual requirements, and manufacturers have wisely endeavored to keep their production close to the level of their commitments. The market consequently is in no top heavy condition, such as has been experienced on several occasions in recent years. Increased demand at this time would necessitate larger production almost at once; this has been proved lately or since demand has broadened a little as manufacturers have increased their output in like proportion. Paper mills of the country are running at a better rate of capacity today than since the spring, and reports that are constantly coming in from mill centres tell of additional speeding up of production.

The outlook for newsprint is pleasingly favorable. Following the customary summer lull, publishers are securing more and more display advertising and the size of the issues of the different newspapers is gradually getting back to where it was several months ago. As an instance of what newspaper publishers have to look forward to, the Ford Motor Company, of Detroit, builders of the most popular make of automobile, announced yesterday that it will spend no less a sum than $7,000,000 for advertising its motor cars in the daily press of the country during the next year. This is merely one illustration of the immense advertising campaigns that are being planned, and it begins to appear as though newspaper publishers are about to experience a period of greater volume of advertising than they ever before have enjoyed. This will mean, of course, a tremendous consumption of print paper which should keep the paper mills in this country and in Canada fully occupied.

Current demand for newsprint is keeping pace with the present output, so that no great carryover of print paper into 1924 is looked for. On the other hand, with many new machines coming into production in Canada next year, the outlook for newsprint manufacturers is that more competitive conditions can be expected.

Book papers are moving in good volume and demand is gradually increasing. Most book paper mills are well supplied with orders, from both contract and transient buyers, and the tone of prices exhibits more firmness than in some weeks. Signs are that bottom market levels for the present movement have been touched and that any further fluctuations will be in an upward direction. Quotations are tending higher and manufacturers are growing firmer in their demands for the figures asked.

There has been a marked improvement in demand for box boards. The spurt in prices of waste paper apparently forewarned paper box manufacturers that prices of board would advance, and they flocked into the market and placed orders for appreciable amounts of board, with the result mills are now better fixed with commitments than at any time since the summer set in. Prices have stiffened a little and the trend is strongly upward. Plain chip board is quoted by eastern mills at $60 a ton f.o.b. New York, and news board at $62.50, and in some cases where manufacturers are especially well supplied with orders slightly higher prices are named. The last report of a service bureau covering the board industry cites figures showing that mills are working at 90 per cent. of capacity, and that they have orders on file which will take their output for at least three weeks ahead.

Nothing of importance has developed in coarse papers. A routine demand exists for wrapping and tissue papers, with prices steady. Fine papers are in good call for this season, and quotations are fully maintained.

GROUNDWOOD — While nearly every kind of raw material used for manufacturing paper is in a firm market position, ground wood probably is the strongest item of all at present. Low water in mill streams, which has curtailed production and made grinders cautious about disposing of any surplus supply they have on hand, has served to strengthen the market to a pronounced degree, and prices of mechanical pulp are firmly on the uptrend. Moreover, as is invariably the case when low water affects production, demand in the open market is increasing, as a good many con-

sumers who ordinarily make most of the pulp they use are obliged to look elsewhere for supplies.

Domestic grinders quote around $38 a ton f.o.b. pulp mills for spruce ground wood for prompt shipment, and any pulp offered at this price basis is reported meeting with a ready sale. Consumers in this country are securing a large part of their supply at present from Canada, and grinders across the border are said to be freely securing $42 and $43 a ton f.o.b. shipping points, with some sales reported up to $45. Canadian ground wood, of course, commands higher f.o.b. prices than domestic pulp because the former is hydraulically pressed and therefore contains less moisture and costs less to transport to consuming centres.

CHEMICAL PULP — Chemical wood pulps have developed a little softer price tone. No broad changes have developed in market levels and yet it is apparent that sellers are not as bullishly inclined as they were and that in some instances at least they are shading asked prices to move certain lots of pulp. Kraft pulp has weakened to a noticeable degree. Sales of foreign No. 1 kraft at 3.10 and 3.15 cents a pound ex dock New York have been reported and in one case a 5,000-ton lot of imported kraft was reported sold to a board mill at 3 cents on the dock New York. Unbleached sulphite is easier, with some brands of foreign No. 1 sulphite reported available at 3.25 cents and less per pound ex dock, and with domestic news grade said to be available down to 3 cents at pulp mills. There is but a routine call for bleached sulphite, and quotations on foreign range from 4.25 to 4.75 cents ex dock for No. 1 quality while the domestic product is quoted at 4.50 to 5 cents f.o.b. producing mills. Bleached soda pulp is quoted at 3.75 to 4 cents a pound at pulp plants, with a majority of manufacturers accepting orders at the lower figure.

No additional news has been received concerning the threatened strike of pulp mill workers in Norway. The strike, if it occurs, is scheduled to go into effect August 23, and advices state that the mill owners are not disposed to grant the demands for higher wages, which would intimate that the strike may materialize.

RAGS — Demand for some grades of papermaking rags holds up very well but there has been less activity in other descriptions this week. Viewed as a whole, the market is fairly firm, with dealers laying stress on the small stocks they own and the light arrivals of fresh supplies from country sources, and giving this as an excuse for the stiff prices quoted. Felt paper mills have let down in their buying to quite a noticeable degree, and prices of roofing stock consequently have softened slightly. Dealers in New York, however, still report sales of No. 1 packing at 1.60 cents a pound f.o.b. this city, while No. 2 roofing stock is bringing 1.40 to 1.45 cents. Foreign roofing rags are firmly held and importers are not hesitating to refuse mill offers which do not come up to their ideas of value. Dark colored cottons are available in small quantities at 1.60 cents per pound ex dock New York but higher figures are demanded for tonnage lots.

Only certain grades of new cuttings are moving in worthwhile amounts. No. 1 white shirt cuttings are selling at 12.50 cents a pound at dealers' shipping points, unbleached muslins at 11.25 cents, and blue overall cuttings at 8 cents, whereas other new cuttings are largely neglected. Old white rags are quotably steady but thirds and blues are quieter and a little easier in price.

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PAPER STOCK — Low grades of waste paper have declined slightly this week, owing to the retirement of some box board mills as buyers, but the reaction in prices has been narrow and indications are that any increase in demand would immediately result in the market moving back to its previous high level. Folded newspapers have sold at 1.15 to 1.20 cents a pound f.o.b. New York, No. 1 mixed paper at 95 cents a hundred pounds, and city mixed paper at 65 cents, these prices representing a drop of about $2 per ton from the top levels prevailing a week ago. Shavings are quotably steady, and so are books and magazines. Dealers generally want 2.10 cents a pound or higher for heavy No. 1 book stock at shipping points, while No. 1 hard white shavings are quoted at 4.25 to 4.50 cents New York, and No. 1 soft white shavings at 3.40 to 3.60 cents. Old kraft paper is firm at around 2.25 cents per pound at dealers' points, and ledger stock is quotably steady at 2.15 to 2.25 cents.

OLD ROPE AND BAGGING — Consuming demand for old rope continues rather quiet but there is a growing call for strings. Sales of mixed strings have been noted at 1.25 cents a pound f.o.b. New York in some cases, whereas old manila rope of domestic origin is offered at 5.50 cents and even at 5.25 cents and is meeting few buyers. Old bagging is in slack demand and quotations are unsettled. Paper mills are filling their requirements at about 1.25 cents per pound at dealers' shipping points for No. 1 scrap bagging, and a cent per pound for roofing bagging.

PULP AND PAPER CENSUS — 1922

The Canadian Pulp and Paper Association has issued the following summary of the preliminary report on the Pulp and Paper Industry in 1922 just published by the Dominion Bureau of Statistics.

Number of Mills Operating

There were 104 mills in operation during 1922, an increase of 4 mills over the preceding year and the total net value of the production of these mills was given at $155,785,388. While the value of production is not as high as in 1920, the quantity of pulp and paper actually produced was much greater, the drop in value being caused by the low prices which prevailed in 1922 compared with those current in 1920.

Capital Investment

The amount of capital invested in the industry increased from $379,812,751 in 1921 to $381,006,324 in 1922, divided among the provinces as follows: British Columbia $32,763,965; New Brunswick $16,310,952; Nova Scotia $6,667,234; Ontario $133,749,364; Quebec $191,514,809.

Number of Employees

The number of employees in the pulp and paper industry in 1922 was 25,830 which includes salaried officers, technical experts, clerical staff and mill employees. Of this number 12,549 were employed in the province of Quebec; 8,136 in Ontario; 2,250 in British Columbia; 1,212 in New Brunswick and 503 in Nova Scotia. The total payroll amounted to $32,918,955 which is somewhat lower than the total for 1921 when the number of employees was 24,611.

Consumption of Pulpwood

The total cut of pulpwood in 1922 was 3,923,940 cords valued at $50,735,361 compared with a total of 3,273,131 cords in 1921. Of the total cut in 1922 the Canadian mills consumed 2,912,608 cords in the manufacture of pulp and paper and 1,011,332 cords were exported in the raw state to the United States. More than 50 per cent. of the exports of pulpwood was supplied by the Province of Quebec.

Production of Pulp and Paper

The total production of wood-pulp and paper in tons and value is shown in the following table:

Wood Pulp

	Tons
Mechanical	1,241,185
Sulphite Blchd.	146,690
Sulphite Unblchd.	532,188
Sulphate	217,862
Other Pulp	12,326
Total value	$84,947,598

Paper

Newsprint	1,081,364
Book & Writing	64,808
Wrapping	81,793
Boards	113,200
Other Paper	25,650
Total Value	$106,260,078

Exports

The total quantity of wood pulp exported in 1922 amounted to 818,247 tons, of which 610,314 tons was sent to the United States; 137,211 tons to the United Kingdom; 3,957 tons to France; 22,349 tons to Japan and 44,426 tons to various other countries.

Exports of paper were valued at $74,825,893 of which shipments to the United States amounted to $65,000,332. The principal items under this heading were newsprint 959,514 tons, wrapping 18,609 tons; waste paper 14,530 tons; book paper 1,584 tons, bond paper 611 tons; hanging paper 1,565,083 rolls, boards, value only $2,328,829.

THE EXPORTERS' ENCYCLOPAEDIA

The publishers of this volume, The Exporters' Encyclopaedia Corporation, 280 Broadway, New York, are offering the remainder of their edition for 1923 at half price in order to introduce the work to new subscribers to their publication and service. This brings the cost of the book with bulletin and the opportunity for asking questions down to $7.50. This offer looks like a very good buy for any concerns interested in export trade.

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(2) Frequent supplements which keep this information constantly up-to-date.

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Herbert S. Kimball.

Engineers — Steam:
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Combe, F. A.
Montabone, A. J. F.
Taylor, Ltd., H. S.

Engineers — Ventilating:
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Management Engineering & Development Co.
Reed Co., Ltd., Geo. W.
Ross, J. O. Engineering Co.
Taylor, Ltd., H. S.

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Ferguson, Hardy
Hamilton Gear & Machine Co.
Hardy, George.
Jenssen, G. D. and Co.
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Management Engineering & Development Co.
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Stebbins Eng. & Mfg. Co.
Taylor, Ltd., H. S.
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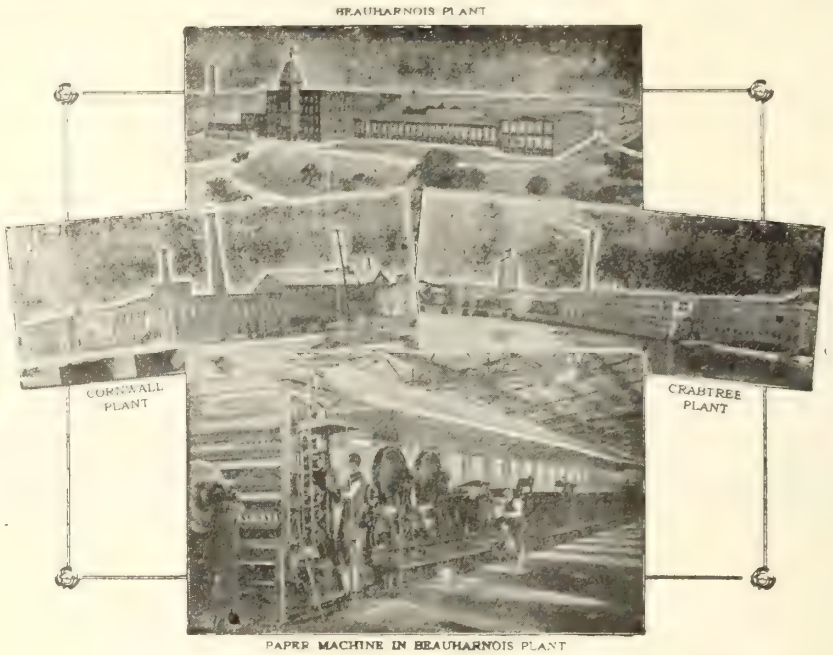
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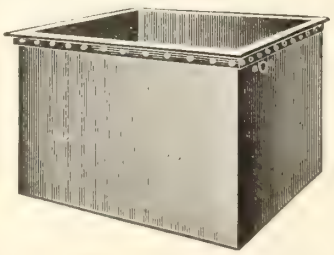
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Reid, C. De Wolf.

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Bailey Meter Co., Ltd.

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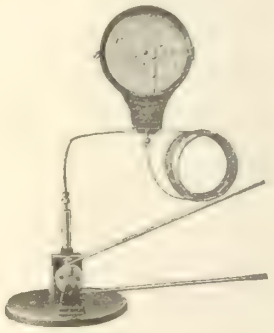
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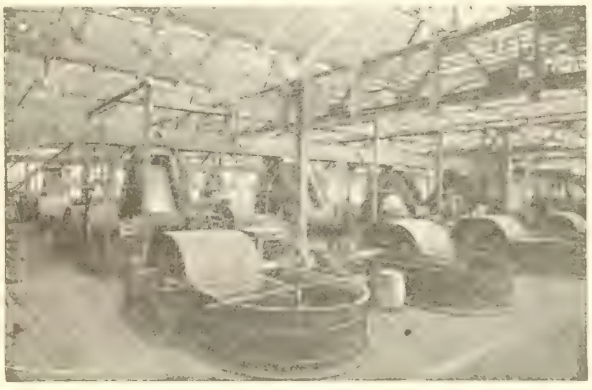


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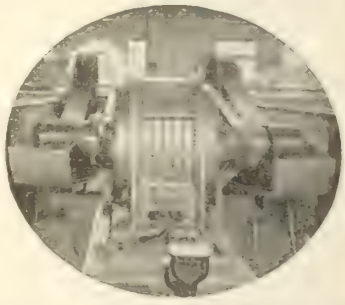


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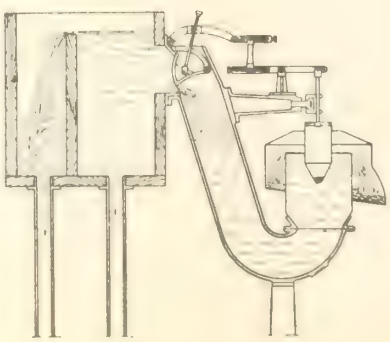
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Hamilton, William Co., Ltd.
Hendrick Manufacturing Co.
MacKinnon Steel Co., Ltd.
Walsh Plate & Structural Works, Ltd.
White, W. H.

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White, W. H.

Pillow Blocks:
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Link-Belt Limited.
Port Arthur Shipbuilding Co., Ltd.
Victoria Foundry Co., Ltd.
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Pipe — Riveted:
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Port Arthur Shipbuilding Co., Ltd.

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Northern Foundry & Machine Co.

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Port Arthur Shipbuilding Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.
Sherbrooke Machinery Co., Ltd.

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Dominion Engineering Works, Ltd.
Goldie & McCulloch Co., Ltd.
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ALPHABETICAL LIST OF ADVERTISERS

See Classified List on Page 73.

Unpaged advertisements appear in every other issue.

A

Alberene Stone Co., Ltd. 28
Abitibi Power & Paper Co. Ltd. .. 84
Acer, J. H. A. & Co., Ltd. 74
American Voith Contact Co., Inc. ..
American Stone Co. 24
American Woodpulp Corporation .. 24
Ayers, Limited 11

B

Babcock & Wilcox .. ..
Barrett & Co., Ltd., The .. ..
Barber, W. J. & Co., Ltd. .. ..
Bathurst Company, Ltd. 82
Bailey Meter Co., Ltd. 10
Bates & Innes, Ltd. 25
Bemis Manufaoturing Associates ..
Bertrams, Limited .. ..
Belgo Paper Co., Ltd., The 82
Beveridge Supply Co., Ltd 18
Black-Clawson Co., The .. ..
Bolton, John W. & Sons, Inc. 26
Boving, Hydraulic & Engineering .. Company Ltd. 12
Bristol Co., The 80
Brompton Pulp & Paper Co., Ltd. .. 82
Burgess, E. T. 30

C

Canada Foundries & Forgings, Ltd 78
Canada Metal Co., Ltd., The 28
Cameron Machine Co. 22
Canadian Combustion Co., Ltd. 12
Canadian Barker Co. 6
Canadian Des Moines Steel Co., Ltd. 27
Canadian Elixman Co., Ltd. 16
Canadian Equipment Co., Ltd. 30
Canadian Fairbanks-Morse Co., Ltd. 32
Canadian Ingersoll-Rand Co., Ltd. ..
Canadian Johns-Manville Co., Ltd. .
Canadian Milk Products, Ltd. .. ..
Canadian Nashua Paper Co., Ltd. .. 86
Canadian Paperboard Co., Ltd. 24
Canadian Pipe Co., Ltd. .. ..
Canadian Sirocco Co., Ltd. 18
Canadian SKF Co., Ltd. 1
Canadian Vegetable Parchment Co., Limited 74
Canadian Vickers, Ltd. 8
Canadian Westinghouse Co., Ltd. ..
Capital Wire Cloth & Mfg. Co., Ltd. 26
Carey, Jas. L. 22
Christe, George, Ltd. .. ..
Clayton, Neil & Jones, Ltd. .. .. ..
Combustion Engineering Corporation Limited .. ..
Crane, Limited .. ..
Crittsinger Burt Co., Inc. .. .. ..
Cleveland Stone Co., The .. ..

D

Date, John .. ..
Dept. of Lands, Forests & Mines Ontario .. ..
Dodge Mfg. Co. of Canada, Ltd. .. 4
Dominion Belting Co., Ltd. .. .. ..
Dominion Engineering Works, Ltd. 16
Dominion Oxygen Co., Ltd. .. .. ..
Donnacona Paper Co., Ltd., The .. 24
Don Valley Paper Co., Ltd. The 24
Dryden Paper Co., Ltd. 24
Dunlop Tire & Rubber .. ..
Dunham, C. A. Co. 17

E

Elixman Paper Core Co., Inc. 16
Elk Fire Brick Co. of Canada, Ltd. 30
English China Clays, Ltd. 1
Engineering & Machine Works of Canada, Ltd. .. ..

F

Ferguson, H. S. 22
Ford, J. & Co. .. ..
Foundation Co., Ltd. 22

G

Galt Knife Co., Ltd. .. ..
Garden City Paper Mills, Ltd. .. 74
Geigy Co., Inc. 27
Goldie & McCulloch Co., Ltd. .. ..
Goold, Shapley & Muir Co., Ltd. ..
Gottesman, M. & Co 29
Grasselli Chemical Co., Ltd., The ..
Graton & Knight Mfg. Co., Ltd. .. 19
Gutta Percha & Rubber, Ltd .

H

Hamblet Machine Co. .. ..
Hamilton, Wm. Co. of Canada, Ltd.
Hamilton Gear & Machine Co. 23
Hans Renold of Canada, Ltd. .. ..
Hardy, George F. 22
Harland Engineering Co. of Canada, Limited .. ..
Hay Knife Co., Ltd., Peter .. .. ..
Hendrick Mfg. Co. .. ..
Hercules Powder Co. 19
Holliday, L. B. & Co., Ltd. .. .. ..
Huestis, A. M. 86
Hydraulic Machinery Co., Ltd. .. 3

I

Industrial Engineering Co., Ltd. ..
International Business Machines Co., Limited. 23
Interlake Tissue Mills Co., Ltd., .. 72

J

Jeffrey Mfg. Co. .. ..
Jenkins Bros., Ltd. 25
Jenssen Co., G. D. 23
Johnson Wire Works, Ltd., The .. 30
Jones & Glassco, Regd. 80

K

Kalbfleisch Corporation, The 86
Kander Paper Stock Co., Ltd., The 24
Kenwood Mills, Ltd. 7
Kimball, Herbert S. 23
Kingsbury Machine Works .. .. ..
Klipstein, A. & Co., Ltd. .. .. ..
Kuttroff, Pickhardt & Co. Inc. ..

L

Lacey, James D. & Co. .. ..
Lagerloef Trading Co. 67
Langston, Samuel M. Co. 27
Laurentide Co., Ltd. 84
Lawrence Machine Co. .. ..
Link-Belt Limited 89
Lombard & Co. Inc. 27

M

Management Engineering & Development Co., The 23
Mead, Patton & Co., Ltd. .. ..
McArthur, Irwin, Ltd. 20
McAvity, T. & Co. ,Ltd. 32
McKinnon Steel Co., Ltd. 22
Mills Works & Machinery, Ltd. .. 80
Miramichi Quarry Co., Ltd., The .. 18
Montabone, J. A. F. .. ..
Montreal Locomotive Works, Ltd. ..
Morrison, J. L. Co., The 78

N

National Paper Stock Co., The 24
Niagara Wire Weaving Co., Ltd. The..74
Northern Crane Works, Ltd. .. .. ..
Northern Electric Co., Ltd. 5
Northern Foundry & Machine Co. ..
Norwood Engineering Co of Canada, Limited 26

O

Oliver Continuous Filter Co. .. ..
Ontario Wind Engine & Pump Co., Limited .. ..

P

Pacific Coast Pipe Co., Ltd
Peacock Brothers, Ltd. .. ..
Penmans Limited 20
Port Arthur Shipbuilding Co., Ltd. 29
Porritts & Spencer Co., Ltd. .. .. ..
Price Bros. & Co., Ltd. 76
Price & Pierce, Ltd. 82
Provincial Paper Mills, Ltd. .. ..
Pusey & Jones Co., The 10
Pulp & Paper Mill Accessories, Ltd 85
Pulp & Paper Trading Co. .. ..

Q

Quarries, C. & M. Co. 79

R

Reed, Geo. W. & Co., Ltd. .. ..
Relph, Darwen & Pearce .. ..
Rolland Paper Co., Ltd. .. ..
Ross Engineering of Canada Ltd. .. 27
Russell Brothers 26

S

Sadler & Haworth .. ..
Sewall, Jas. W. 22
Sherbrooke Machinery Co. 9
Smallwood Stone Co., The 24
Smallwood Low Stone Co., The .. 27
Smith Howard Paper Mills, Ltd. .. 78
Spanish River Pulp & Paper Mills, Limited 86
Steel Trough & Machine Co., Ltd . 78
St. Maurice Paper Co., Ltd. .. ..
Sturtevant Co. of Canada, Ltd. .. 22
Swenson Evaporator Co. 23

T

Tallman, Brass & Metal Ltd. 74
Taylor, J. A. .. ..
Taylor, H. S., Ltd. 23
Texas Gulf Sulphur Co. .. ..
Ticonderoga Machine Works 17
Tippett & Co., Ltd. 28
Tyler, W. S. & Co., The 27
Trimbey Machine Works .. .. ..

U

Underfeed Stoker Co. of Can., Ltd 2
Union Screen Plate Co. of Canada, Limited 87
Union Sulphur Co., The 30
United Wire Works, Ltd. 28

V

Vera Chemical Co. of Canada, Ltd. 78
Voorhees Rubber Mfg. Co. of Canada, Limited 23

W

Wallace, John H. W. & Co., Ltd. .. 22
Wardlaw, T. D. & Son 27
Walmsley, Charles & Co. Ltd. 13-14-15
Warren, Kenneth L. 22
Warwick Woollen Mills, Ltd. 28
Watford Engineering Works, Ltd. 13
Waterous Engine Works 90
Wayagamack Pulp and Paper Co., Limited .. ..
Weir, G. & J. (Canada), Ltd. .. ..
Westbye, P. P. .. ..
White, W. H. 22
Whyte, William 23
Wilson Patterson Co. .. ..

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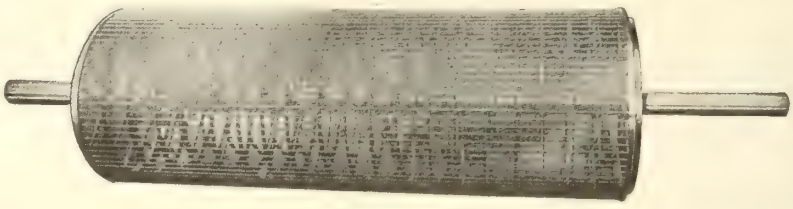
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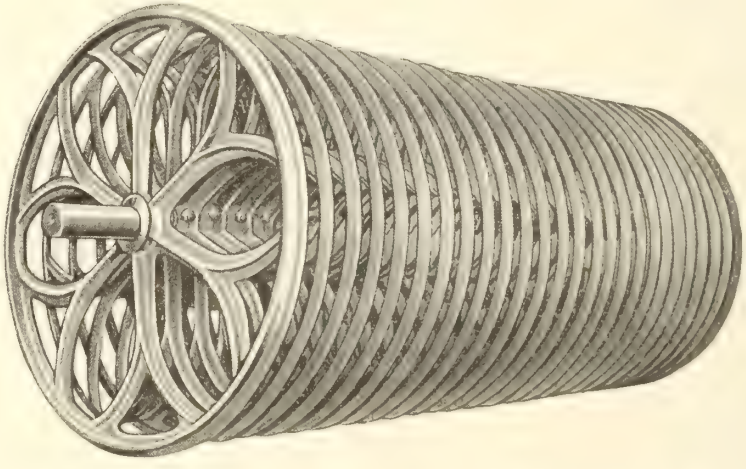
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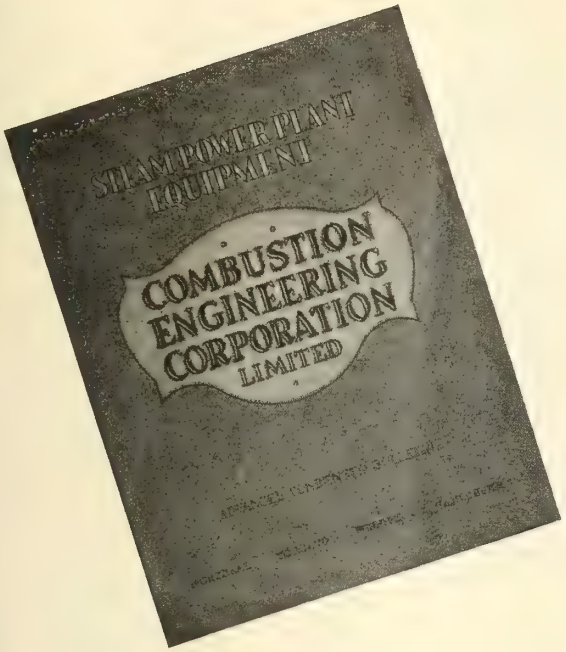


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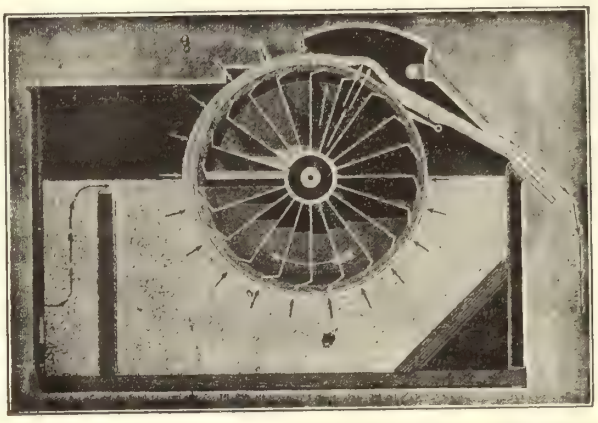


Diagram illustrating Cross Section of Pneumatic Save-All, showing direction of Air Pressures and Formation of Film of Fibres

Money SAVED pays dividends. Our Save-All is earning a million dollars a year for its users by saving waste fibre. We are now on trail of the other millions which are still flowing away each year in waste water.

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Some Known Facts and a Few New Ones

(1) Everyone interested in the paper business knows that there is more or less waste from beginning to end of the entire process.

(2) He knows that in every industry in the world financial success rests, in a very great degree, upon preventing waste, in finding and stopping up, one by one, every possible source of lose.

(3) He knows that great progress has been made, in his own business, by instituting wise economies — real economies—in management, in production, in the marketing of his product.

(4) And yet he knows that until recently very little progress has been made in preventing the enormous but hidden losses through waste water that is rich in fibre.

(5) He knows all about the schemes that have been exploited and the costs incurred in trying to save this waste, and that as a rule this waste still goes on because the measures tried have not proved capable of preventing it.

(6) Nevertheless, a way exists to save waste fibre successfully. The engraving gives an idea of this way, and we request only the opportunity to tell every mill owner and superintendent all about it.

(7) The reason of our success in this line is that we have found the one natural method of catching and holding the fibre as it flows away in the white water, and have applied this method in our Pneumatic Save-All.

(8) In the engraving our Pneumatic Save-All is shown in cross section. Inside the cylinder mould we produce a very slight vacuum, by a blower. The waste water is lightly sucked through the screen and drains away while the fibers are trapped and held upon the outside. They cannot rub off; they cannot slip through; for they are pressed flat upon the screen by air pressure. (See the inwardly pointing arrow heads.) At the top of the circle each section of the cylinder in turn comes under the direct action of the pressure side of the blower, and the film of pulp is lifted off (see the outwardly pointing arrows) onto a deflector. One Save-All and blower take only 5 H.P.; and the same blower, with very little extra power, will serve two Save-Alls.

We have installed hundreds of them in mills where old methods had proved useless, and where we have had to prove both the existence of heavy losses and the power of our Save-All to prevent them.

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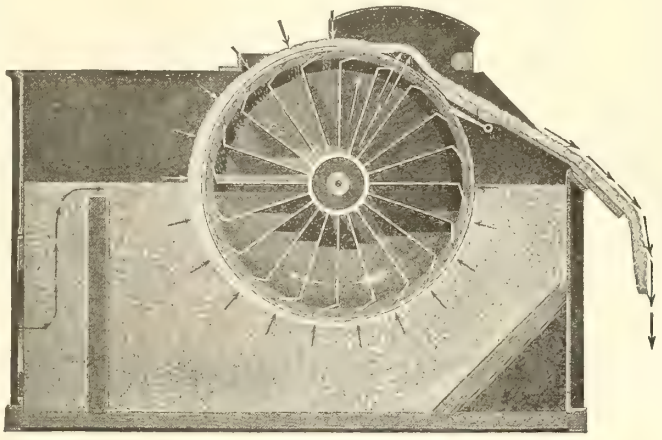
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SIMPLE, DIRECT, ECONOMICAL AND AUTOMATIC

THIS process is now in general use. It is installed in many prominent mills as their standard method, and has been in service over a period of several years, so that it is thoroughly established.

With our Pneumatic Thickener, the stock from screens is thickened directly to the density desired for the beaters, and is delivered to the beaters without going through the usual process of forming "laps" on a wet machine. The wet machine is used only for thickening stock to store or ship.



We particularly advise this method for thickening sulphite and soda pulp, as it delivers this class of stock in a perfectly smooth mass of uniform density, and our customers say that they have never before accomplished this result so successfully, even with wet machines.

The pneumatic method, being simple, direct, and automatic, is operated at far lower cost than is possible with wet machines.

In the special pneumatic pulp-thickening machine which we build the stock is thickened on a revolving cylinder mold by suction, and is removed by air-pressure. This action is rendered so uniform that all irregular thickening of stock is prevented. For example: if you desire to thicken to 3 per cent, we guarantee our Pneumatic Thickener to work at that point within ¼ of 1 per cent when properly installed.

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We believe this method to be the cheapest to operate and maintain that is now in use.

The entire process is automatic and continuous. It dispenses with the costs of power and labor required in wet machine operation, and its sole cost is the slight expense of power required by the blower and to revolve the cylinder mold. Moreover, it occasions less waste of stock than the wet machine or the decker.

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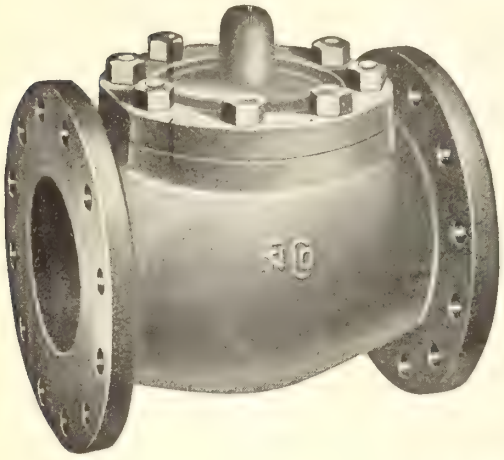
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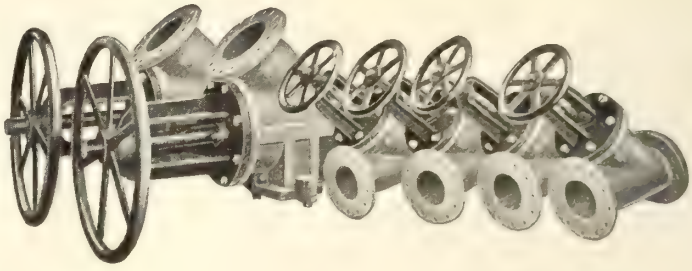
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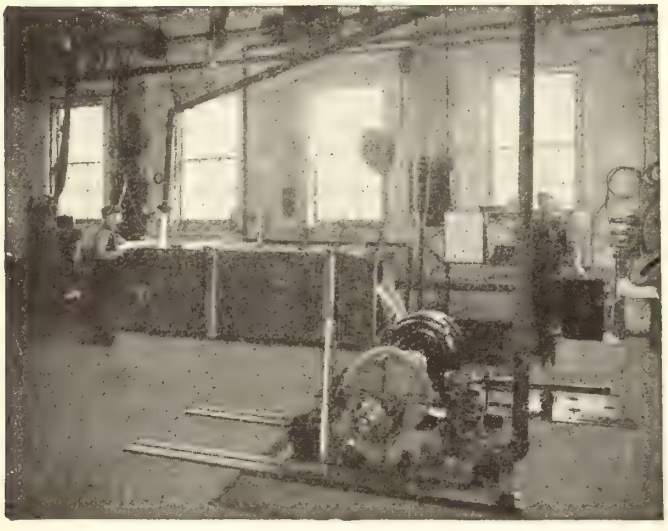
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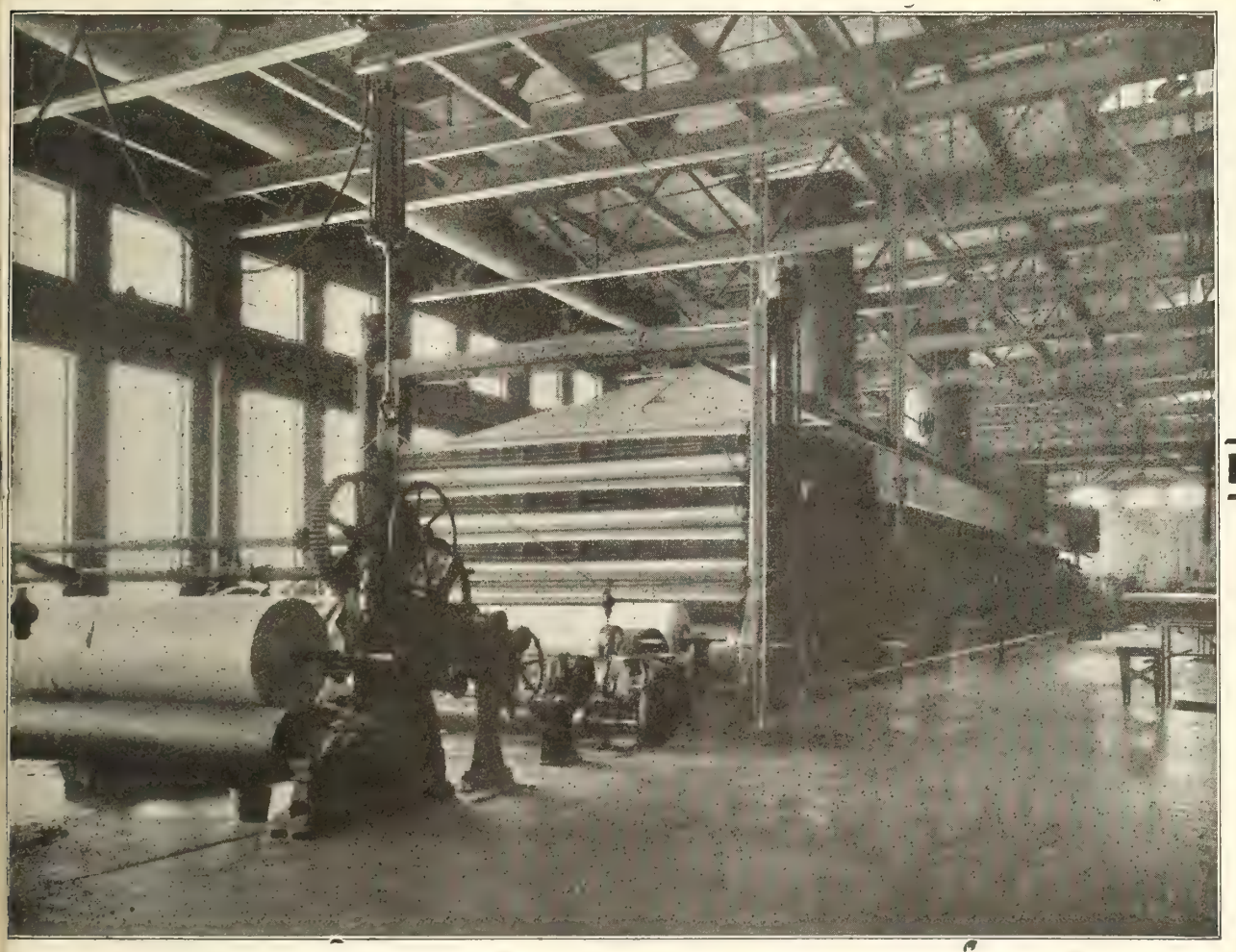
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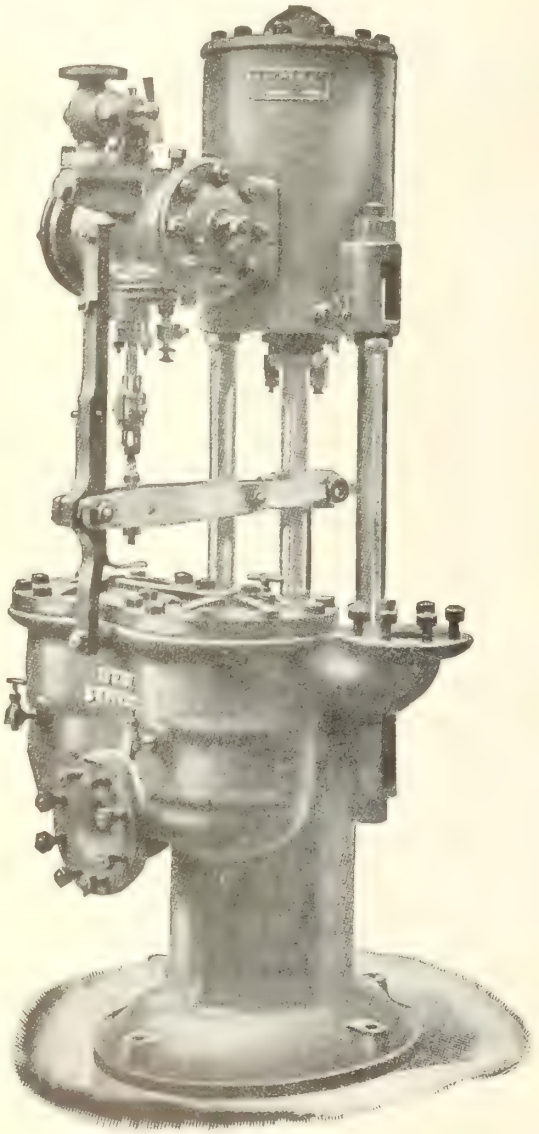
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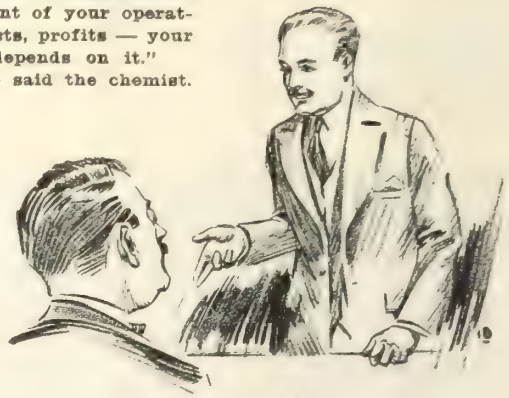
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said the manufacturer, "just how our business is materially benefited by chemistry."

And the chemist did. He also told how the National Exposition of Chemical Industries presents vital information in a graphic way regarding quality, cost, preparation and treatment of all raw materials — woods, metals, glass, paper, rubber, textiles, etc., how modern machinery lowers costs and increases the productivity of labor; how material ordinarily wasted can be used to great advantage; in brief, the chemist showed how a visit to the exposition helps **any executive** to add to the profits of his concern. Preparations are under way to make America's most important Industrial Exposition this year epochal in its character and scope.

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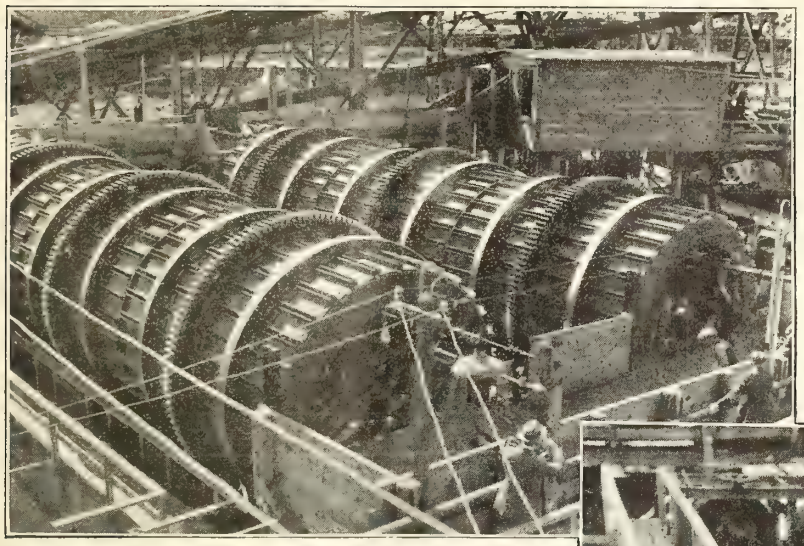
Write For Full Details

of the great work being accomplished. The facts are interesting.

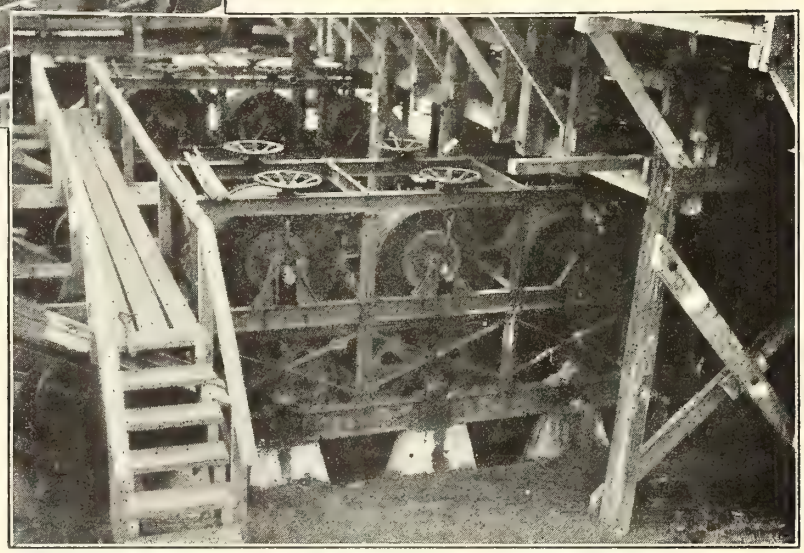
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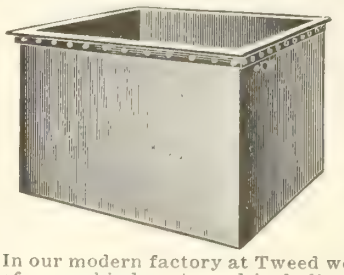
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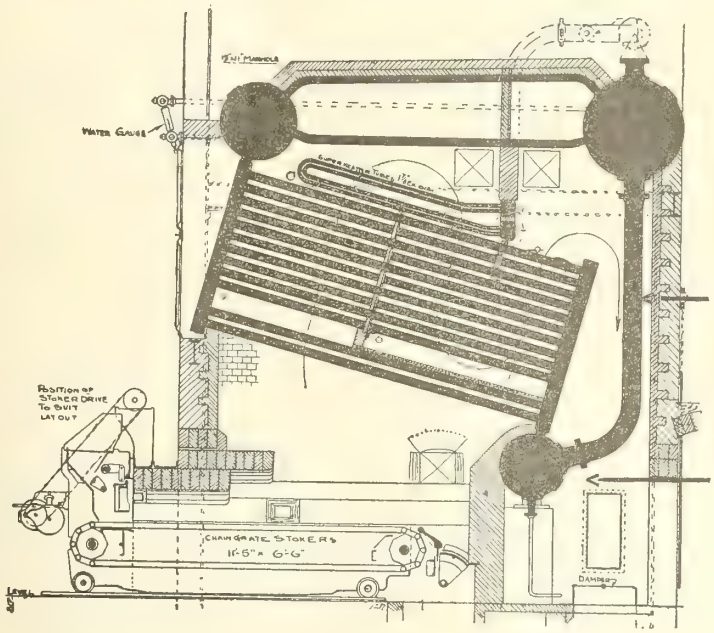
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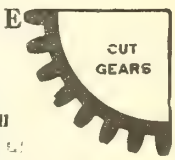
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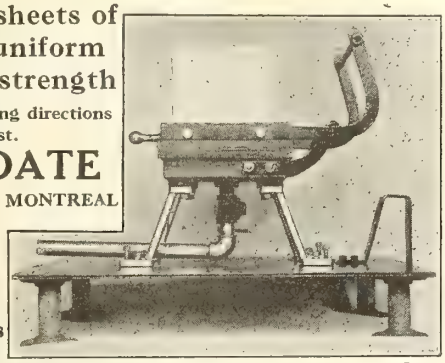
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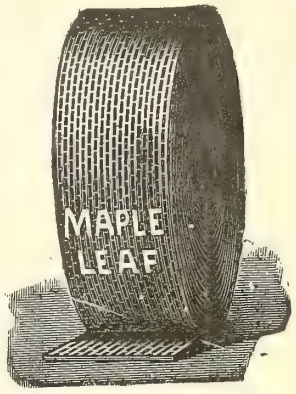
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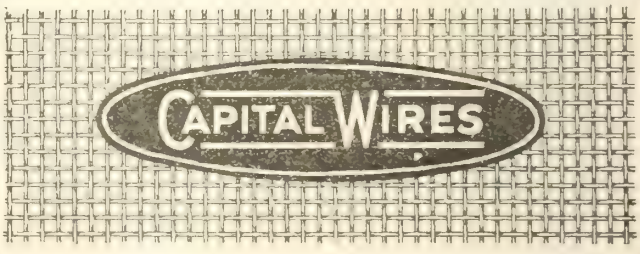
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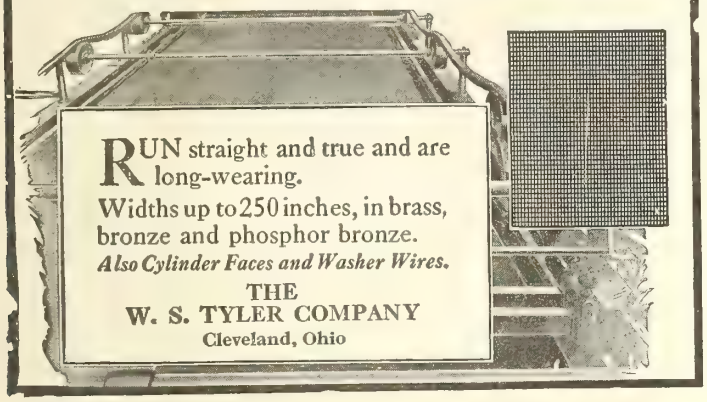
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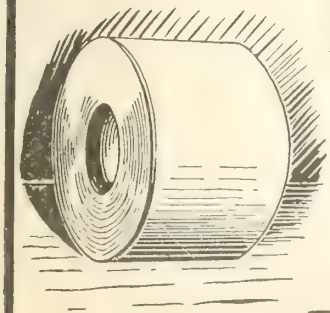
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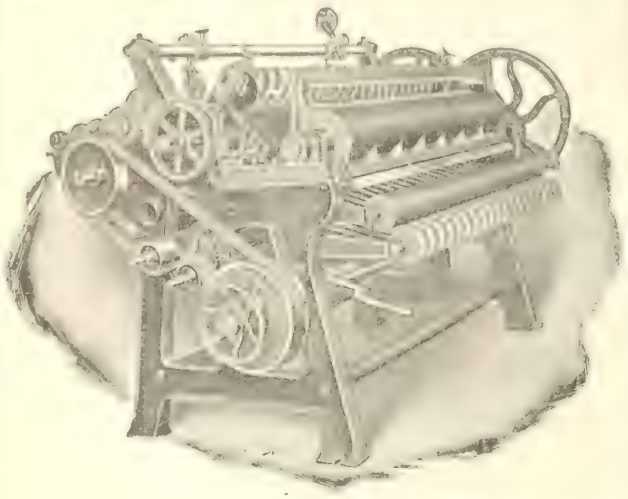
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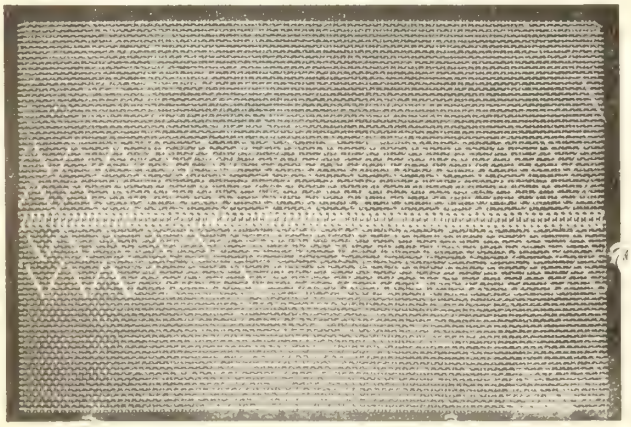
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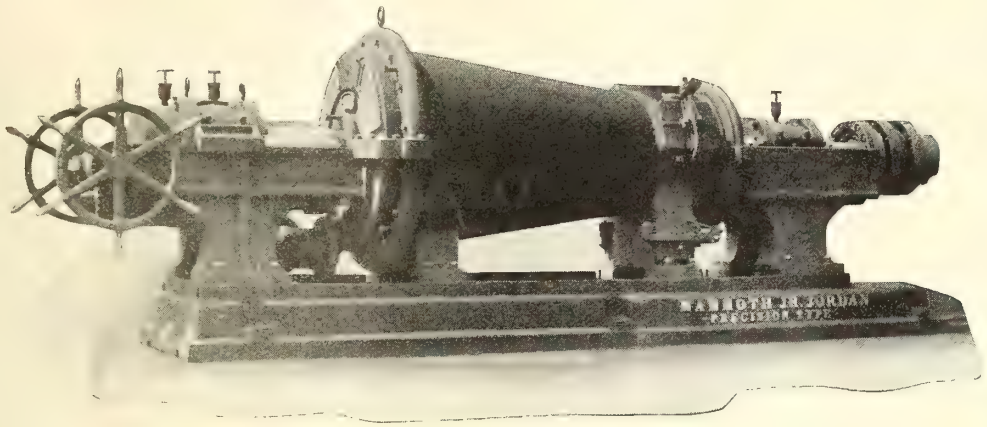
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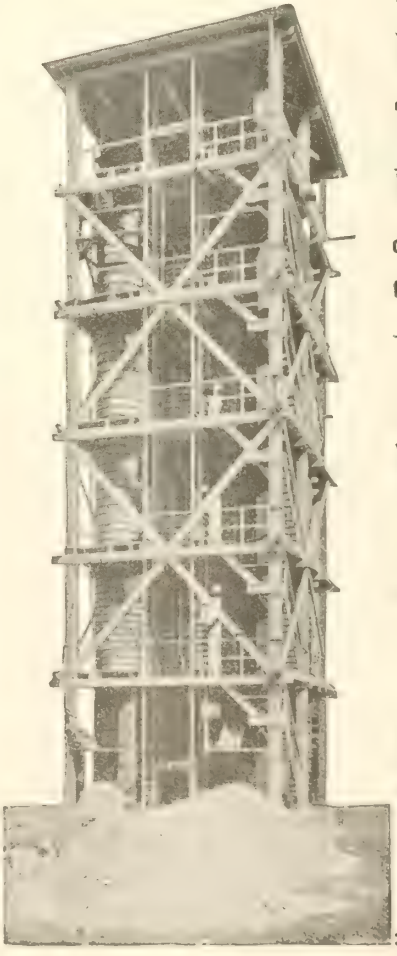
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OF CANADA

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TABLE OF CONTENTS

Editorial:

Embargo or free market in U.S. — which? 859
To get knowledge, sit still 859
Do settlers settle? 860

Special Articles:

Chemical pulp and wrapping paper 861
Planning the new building 865
The British Empire Exhibition 867
Western chemical industries 869

Miscellaneous Information:

"The Manufacture and Coloring of Boxboard" 864
Paper consumption a measure of culture 864
"The production and Use of Printing Papers" 868
Manufacturing facts on pulp stones 870
"The Forest Resources of the World" 871

News of the Industry:

The safety flag 866
"Paper Making" changes hands 866
Newsprint production in June 868
Swedish Minister to U. S. visits Canadian mills 870
The Pulpwood Commission 872
Barnjum challenges Government 873
Brompton buys Dominion Lime Co. 874
Pulp and paper news 875
Slash burning edict for N. B. 876
New Brunswick news 876
United States notes 877
British trade news 878
British Empire Exhibition 878
Wrapping food in papers forbidden 882
Newfoundland wood via Sorel 882
Production efficiency lowers cost 882

The Markets:

Canadian trade conditions 879
New York markets 880

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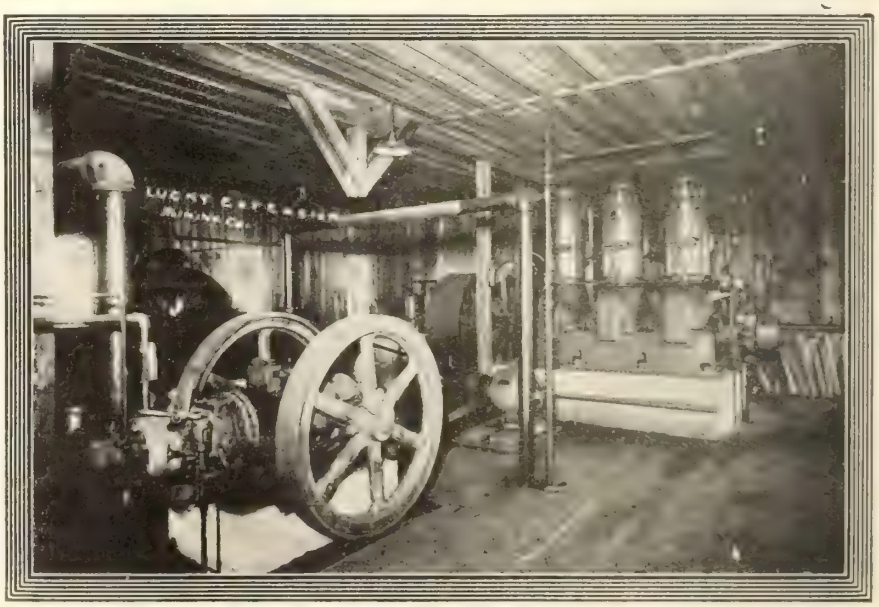
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EDITORIAL

EMBARGO OR FREE MARKET IN U.S. — WHICH?

Em-bar-go. (Em, round, about; Bar, to obstruct or prevent; Go, to move.) It will be seen from this analysis of the word that embargo means to place an obstruction round something in order to prevent its being moved. This may not be expert philology, but it tells us pretty definitely what an embargo is, and it likewise tells what the embargo will do with regard to pulpwood which is now being stripped from Canadian lands, and shipped as rapidly as carriage can be provided to the mills of the United States. This wood is being used in mills which are direct competitors of Canadian mills and it provides little or no revenue to our Canadian Governments and practically no employment to Canadian labor or freight for railroads. It is all right to love your enemy, and on occasion to give him a meal or even a car load of coal, a few tons of pulp or a few rolls of newsprint, but it is quite another thing to furnish him with practically all his raw materials for running his mill and then getting a bucket of ice water for your pains.

That is the situation which Canada occupies in relation to the United States pulp and paper industry. At the present time, the American mills are consuming somewhat less than 6,000,000 cords of wood per year, and at the present rate of export of wood from Canadian timber limits which amounts to 2,000,000 cords per year, it will be seen that Canada is furnishing more than one-third of the raw material used in their whole pulp producing outfit.

But this is not all.

Every stick of this wood, which is sorely needed by Canadan mills themselves in the face of the rapidly diminishing supply, is being converted into a product sold in direct competition with our own mlls. We said "competition" but that is not correct. **Our mills are not allowed to compete** in the United States, with the concerns using this wood which Canada is furnishing them. A duty of from 25 to 35 per cent on all grades of paper, other than newsprint, completely shuts us out of their market for book and fine papers, for kraft and other wrappings, for board, tissues, blottings, and so on down the list. This is a ridiculous situation and has become intolerable. The leading article in this issue shows conclusively the present position of Canada's wrapping paper industry in relation to the American market. It shows that Canadian wrapping paper doesn't figure at all in the American market whereas paper from European countries where labor conditions are nowhere near on the level with the status maintained in Canada and the United States, can send their products of cheap labor and poor working conditions into the United States while Canada is penalized for maintaining a high standard the same is true of other grades.

If the American mills want Canada to keep the bars down on pulpwood, let them take the bars down on paper.

The Government has appointed a Commission to investigate the pulpwood situation with regard to supply and the need for restricting the export of this raw material. They can bring in but one answer, namely, that too much pulpwood is going out of the country, and the export should be stopped. But the Lord only knows when they will bring in that answer. In the meantime, it is the duty of the Government to make it perfectly plain to United States competitors of Canadian mills that if they want Canadian pulpwood, they must grant a free market for the sale of Canadian-made paper in competition with paper made from Canadian grown wood. And the Government needn't wait for the report of the pulpwood Commission for making this situation known.

TO GET KNOWLEDGE, SIT STILL

In the course of an excellent address on the many good effects on body, mind and spirit of the practice of keeping quiet, a statement was made which has peculiar significance just now when thoughts are turned towards the class room and textbook. It was, "The secret of acquiring knowledge is to sit still."

This statement is absolutely right. Skill is, and must be, developed by active practice in the use of eye and hand, but knowledge is a matter of the mind, and the mind works best in quietness. One may, by study, know how to swim or to operate a machine, but the ability actually to do so, comes only with the actual attempt. Skill comes with doing it repeatedly. But knowledge comes by hearing, reading and thinking.

A number of men, young and older, are planning to take up or continue their study of subjects connected with the Manufacture of Pulp and Paper. These men realize, or will soon realize, the fundamental necessity of elementary mathematics and science. Mathematics is particularly important, and is the subject generally slighted by the boy in the public schools. Those who have any influence with boys at this stage should impress them with the advantage of a knowledge of figures. The disadvantage of lacking it is shown in

the fact that the majority of men who enroll for correspondence courses feel that they should start at the beginning. It is obvious, too, in spite of a few remarkable exceptions, that success requires a knowledge of one's language and the ability to write it.

There are several channels through which knowledge is obtained. Almost everybody begins with the public school, but some drop out from choice or necessity before the course is completed. Facilities for correspondence instruction are available whereby such persons may continue the elementary studies, and take up special lines. The Institute of Industrial & Domestic Arts has already enrolled more than 360 students. The most carefully prepared and comprehensive textbooks have been made available through the generous contributions of the Canadian Pulp and Paper Association, and Associations and concerns in the United States interested in the Pulp and Paper Industry. The course is carefully planned and efficiently conducted, but its value to the student depends upon his sitting still and studying his job through the lessons prepared.

In the last issue of this magazine was printed a description of another institution which offers a course of study in Pulp and Paper Making. Professor Libby who has charge of these courses at the New York State College of Forestry at Syracuse, was associated with the editor some years ago at the University of Maine, where the first University course in Pulp and Paper Making was given. Professor Libby is most capable of conducting such a course as is outlined in his article. This course, it will be seen, offers the student an opportunity to become skilful in laboratory methods of testing and analysis, and of acquiring a knowledge of scientific subjects connected with pulp and paper manufacture as well as the principles underlying this industry. Here again, the success of the student, and the satisfaction he gets from his course, will depend upon his ability to keep quiet and absorb by ear and eye, and assimilate by thinking, the information that is made available to him.

Again we say, with Dr. Ritchie, the person who wishes to acquire knowledge must learn to sit still and think.

DO SETTLERS SETTLE?

The recent report of the Dominion Bureau of Statistics shows that in Nova Scotia the farm acreage has decreased from 5,080,901 acres in 1901, and 5,260,455 acres in 1911, to 4,723,550 acres in 1921. During this time, there has been some increase in the value of farm property. We have heard a good deal about the necessity for the clearing of land in order to accommodate settlements and farming. The statement of the Bureau of Statistics seems to show that further clearing of land for this purpose is apparently unnecessary. It would seem from reports that we have heard of conditions in Nova Scotia that a very large amount of land has been cleared by forest fires in addition to that which has been cleared by farmers and settlers. It would appear, therefore, that not only has a lot of land been unnecessarily cleared but much land which has been under cultivation has since been abandoned. We do not know of any part of Canada where such intensive cultivation is being practised as to warrant the decrease in cultivated area. It is probable that the destruction of the forest has killed industries that formerly supported the farmer.

We noticed in a daily paper recently, a letter from a person in Graceville, Quebec, who states that a large percentage of farmers would not be able to make ends meet except for the supplementary income that they get from clearing their land of pulpwood. This is quite a different proposition from cutting off the wood from sufficient ground to begin planting or to clear enough land so that the pulpwood will bring in sufficient to tide the settler over the first season or two. The statement appears to us to be an admission that the person who cannot make ends meet by farming is not on a farm, or that he is not a farmer. It may be that through an error of his own, or an error of the Department of Colonization, he has settled on land which is not suitable for agriculture or it may be that he has purposely settled on land which contains good timber merely for the purpose of clearing it off and selling it for pulpwood. If the latter is the case, or if his ground will not grow crops anyway, it is just a question of a few years when he will have to pull up stakes and repeat the settling process somewhere else.

It does not appear from either of these cases, which perhaps may not be either of them restricted to the provinces mentioned, that some sections of our country are being properly or permanently settled.

COBWEBS

A newspaper headline says: "42,000 suckers killed by Government." This refers to the destruction of undesirable fish. But we have heard the name applied to people who lack the merest vestige of common sense in regard to investing hard earned cash. This kind of poor fish is destroyed by the financial shark.

Pulpwood is being shipped from Newfoundland by vessel to Sorel, opposite Three Rivers and trans-shipped by rail to pulp mills in the United States. Newfoundland prohibits the export of pulpwood except from one or two places where special concessions have been obtained.

?

Great occasions do not make heroes or cowards; they simply unveil them. Silently day by day, we grow strong or weak and at last some crisis shows what we have become.—Canon Westcott.

Chemical Pulp And Wrapping Paper

By M. C. H. in Commerce Monthly

In the following article, which appeared in the September issue of the monthly magazine of the National Bank of Commerce in New York, the author, by omission, intimates that Canada is not an important competitor in the U. S. market with domestic wrapping paper mills. This is due, of course, to the fact that Canadian mills maintain the same standard of wages and working conditions in the face of which there is a prohibitive tariff. The answer to this is, that the United States must make generous tariff concessions on Canadian papers before the with-holding of an embargo on pulpwood is to be considered. —Ed.

* * *

Paper is in world-wide use as a commercial wrapping. Its pre-eminence as a wrapping material has been due to its strength, folding quality and lightness of weight. Abundant supplies of wood-pulp have had their effect also. It is estimated that one-seventh of all paper manufactured is used for wrapping purposes and paper of this grade serves as a material for the manufacture of many other articles. Thus, among recent innovations made from wrapping paper are paper yarn, twine, cording for paper furniture, clothing, player-piano rolls, pails, bottles and barrels.

Chemical pulp, because of its strong unbroken fibers, is the chief raw material used in the manufacture of wrapping paper. By far the greater part of wrapping paper is made from chemically prepared wood-pulp, while about one-third of the United States consumption of chemical pulp is used in the production of wrapping paper.

There are three processes by which chemical pulp is prepared, namely, the sulphite, the sulphate and the soda. The largest amount of chemical pulp is produced by the sulphite process, in which the wood is cooked under pressure from 8 to 10 hours or longer with a solution of bisulphite of lime. In the slow-cook process the wood is cooked from 20 to 30 hours. Pulp made by the sulphate process, intentionally undercooked, produces a strong stock known as kraft pulp. This process has helped to conserve the diminishing supply of spruce as it is possible to utilize other coniferous woods such as jack pine and tamarack. Scandinavian mills largely employ the sulphate process in the manufacture of their kraft brown wrappings which are renowned for strength and finish. The soda process is used principally in the manufacture of pulp for book paper.

The United States is the largest producer of chemical pulp in the world, but its production is not sufficient to meet its requirements. The production in 1922 amounted to 2,038,000 tons. Practically the whole of this amount was consumed in the United States, and was supplemented by about 932,000 tons imported from Canada, the Scandinavian countries and Germany. Table A shows the production of chemical pulp in the United States in comparison with the total production of all grades of wood-pulp for the years 1914, and from 1918 to 1922 inclusive.

Canada ranks after the United States and Sweden as a producer of chemical pulp, with an output of 284,000 tons in 1913. Twenty per cent. of this amount was exported, chiefly to the United States, Japan, United Kingdom and China. The remainder was manufactured into paper by the local mills. By 1922, production of chemical pulp had increased to 690,000 tons, and Canada is regarded as the main source of the world's future supply.

During the war period, Canadian exports of chemical pulp to the United States were stimulated by the exclusion from the American markets of the larger part of Scandinavian products, through lack of shipping, and its being placed elsewhere. Since the war, although imports from Europe have grown to large proportions, Canada has retained its position as the leading foreign source of American imports of chemical pulp. Imports from Canada in 1922 were more than seven times the volume of the prewar period.

Table A — Pulp Production of the United States

Year	Chemical	All grades	Chemical per cent. of all grades
	(in thousands of short tons)		
1914	1,599	2,893	55
1918	1,896	3,212	59
1919	1,925	3,385	57
1920	2,222	3,808	58
1921	1,526	2,801	54
1922	2,038	3,522	58

The European chemical pulp-producing countries include Sweden, Norway, Germany, Czechoslovakia and Finland. Sweden is the most important and that country ordinarily produces more than one-half of the chemical pulp entering international commerce. The bulk of Swedish exports goes to England, Germany, the United States and France. Its maximum output, 1,109,000 tons, was reached in 1922. Labor troubles in the early months of the present year have caused reduction in current output. The absence of Sweden's contribution to international trade has been felt by the United States and other countries which ordinarily rely on that country for pulp. The labor difficulties have now been adjusted, but it will be some time before the former rate of production and normal activity in the market are again reached.

Production of chemical pulp in Norway during 1922 amounted to 212,000 tons. However exports during that year, due to the carryover from the previous year, amounted to 226,000 tons. Finland has increased steadily in importance as a source of American supplies of chemical pulp, and that country promises to be a permanent source of supply for the American paper mills. Over twice as much chemical pulp was exported from Finland in 1922 as in 1913. In 1913, Germany produced 940,000 tons of chemical

pulp and exported one fifth of the output. During the war, production declined and their exports ceased. However, in 1922 more than 80,000 tons were exported. Germany is increasingly dependent upon foreign wood.

Exports of chemical pulp from the principal producing countries for the years 1913 and 1918 to 1922 are shown in Table B.

Table B — Exports of Chemical Pulp from Principal Producing Countries

	1913	1918	1919	1920	1921	1922
	(in thousands of short tons)					
Sweden	723	512	750	790	466	986
Norway	232	187	147	232	98	226
Germany	198	*	*	38	†38	81
Finland	85	42	81	102	140	203
Canada‡	56	269	417	430	454	355

*Not available.
†May to December, inclusive.
‡Figures for fiscal year ending March 31.

Facing Pulpwood Shortage

The possibility of the exhaustion of accessible supplies of pulp wood is a question frequently in the minds of pulp and paper manufacturers. During recent years and even before the war the matter was brought into special prominence as a result of the increasing cost of pulp. This is due in large measure to the gradual exhaustion of the more accessible and therefore cheaper supplies of pulp wood. The demand for wood-pulp is increasing, not only for paper making but for the manufacture of a large variety of widely different materials and articles such as artificial silk, wallboard, shipping containers and utensils for dairy products.

The United States has, in times past, imported considerable quantities of pulp wood from Canada. However, there is at present an embargo on exports of pulp wood from Canadian crown lands (covering about 85 per cent. of the forest area), while recent legislation empowers the Government to prohibit all export of pulp wood. To meet the situation caused by the depletion of domestic pulp wood timber as well as Canadian embargo, the paper and pulp companies of the United States are conducting a campaign for Federal and state forestry legislation to encourage timberland owners to reforest their cutover lands so as to create a continuous supply, but so far have received small encouragement. Under present conditions the United States faces a pulp wood shortage for a half century. With a decreasing supply of pulp wood in the United States and an increasing demand for paper, this country is the leading importer of pulp. Imports of chemical pulp for 1922 were three times as great as average imports for the prewar 1910-14 period. The United States depends on Canada as its principal foreign source of supply of chemical pulp, while Sweden also furnishes a substantial amount. Data for imports for the five-year period 1910-14 and from 1918 to 1922 are shown in Table C.

Wrapping Paper a Business Barometer

The physical volume of retail trade is to a certain extent reflected in the consumption of wrapping paper. During the period of depression the wrapping paper industry suffered in volume of sales but with the recovery of general business, American manufacturers of wrapping paper were equipped to meet the increased demands on the industry. Prewar production (1914), including bag paper, was 882,000 tons. By 1920 it had increased to 1,044,000 tons; in 1921 it dropped to 782,000, and rose again to 1,048,000 tons in 1922.

Table C — Imports of Chemical Pulp into the United States by Countries of Origin

Country	1910-14 (5-yr. aver.)	1918	1919	1920	1921	1922
	(in thousands of short tons)					
Canada	55	344	284	408	237	406
Sweden	101	1	76	133	137	361
Norway	79	5	11	20	15	77
Finland	*3	..	14	27	38	57
Germany	76	..	..	8	18	22
Other countries	15	1	2	5	7	9
Total	329	351	387	601	452	932

* Four-year average, 1911-14.

Table D shows production and stocks of wrapping paper for each month from January, 1920 through April, 1923. Bag paper has been included with wrapping since the greater part is usually manufactured from chemical wood-pulp in wrapping paper mills although a small percentage of the bag paper included may be manufactured from other kinds of material. Since reaching its low point in the early part of 1921, the wrapping-paper business has continued to improve. The market is fairly steady and conditions appear favorable for a continued satisfactory volume of business.

Manufacturers of paper in this country are now producing nearly all of the grades of wrappings made abroad prior to the war. There is an increasing demand on the part of merchants for domestic papers on account of less delay in delivery and uniformity of quality.

An interesting branch of the wrapping industry as well as an important and rapidly growing one is the manufacture of vegetable parchment, greaseproof and glassine papers. Many years of strenuous effort on the part of the manufacturers have established these useful papers in the United States. Vegetable parchment, a chemical product made chiefly of cotton cellulose combined with a small percentage of bleached sulphite, is a valuable food product wrapper. It is used for wrapping products to retain moisture, flavor and odor. Domestic mills are equipped to supply an increase in demand. Glassine paper is composed of sulphite pulp. Its transparency and its greaseproof qualities are effected by special beating and super-calendering, and it makes a hygienic and attractive paper for food products or for packages where both protection and transparency are necessary. Prior to the war there was only one or two manufacturers of glassine in this country. Today there are eight or more with a production of about 100 tons daily.

The United States, in normal times, has been a net importer of wrappings, the greater part of which is supplied by the Scandinavian countries. During the war period imports declined and even as late as 1921 only one-third as much wrapping-paper was imported as in 1914. Exports were stimulated by the reduction in available European supplies, and from 1916 through 1920 gross exports averaged well over 30,000 tons a year. During 1922, however, imports of wrappings increased 450 per cent. and exceeded exports by 15,000 tons. This marked gain between 1921 and 1922 is an indication of the efforts being made by foreign countries to invade American markets with their products.

Table D — Production and Stocks of Wrapping Paper (Including Bag Paper)

Month	1920		1921		1922		1923	
	Production	Stocks on hand end of month	Production	Stocks on hand end of month	Production	Stocks on hand end of month	Production	Stocks on hand end of month
	(in thousands of tons)							
January	91	28	51	49	83	58	96	52
February	79	35	54	55	77	63	90	52
March	87	33	59	61	89	69	*87	*43
April	95	35	60	62	79	72	91	46
May	90	29	60	63	89	74	96	46
June	93	24	57	64	85	75	..	..
July	93	24	52	65	83	73	..	..
August	95	26	67	66	93	66	..	..
September	90	22	73	59	90	58	..	..
October	90	23	84	56	94	52	..	..
November	79	28	85	54	97	49	..	..
December	61	39	82	52	91	68	..	..

* Bag paper excluded. Not available for the month.

Gross exports of wrapping-paper from the United States are not commensurate with production, which in 1922 amounted to 1,048,000 tons. Exports for the same period were less than 2 per cent. of production. In order to safeguard the industry the ratio of exports to production should be much higher, for with the increase of production brought about by the war due to foreign demand as well as heavy demand at home, it has been questioned whether the domestic market in the future will be sufficient to absorb the production. Broader export markets would be serviceable as a means of stabilizing the industry, particularly in periods of low domestic activity. In the face of renewed competition from Europe, the postwar years show a fair gain over prewar exports. Exports for 1921 were almost twice the amount of exports in 1914 while 1922 shows a 40 per cent. increase over 1921. Table E shows trade of the United States in wrapping-paper for the years 1914 through 1922.

The Latin American countries are logically the best customers for paper and paper products exported from the United States. However, with the exception of Cuba, the market has not been developed extensively. The proximity of those countries to the United States is an important factor in further developing the demand for American paper.

Table E — Trade of the United States in Wrapping

1914	18	7	*11
1915	15	12	* 3
1916	7	32	25
1917	4	32	28
1918	4	30	26
1919	2	37	35
1920	2	31	29
1921	6	13	7
1922	33	17	*16

* Net imports.

Glassine and greaseproof papers are used extensively in the Latin American countries. Here rests one of the many opportunities for the American manufacturers to develop a profitable trade with these countries. Competition is keen with the Scandinavian countries and Germany from the standpoint of price but when quality and service are given due consideration, the United States manufacturers have a reasonable basis for competition.

European countries have an advantage over the United States in so far as the price of wrapping-paper is concerned. The cheap labor which is predominant in most of the manufacturing countries of Europe enables the manufacturers to deliver paper into international markets at low prices in comparison with cost of production and distribution in this country. On the other hand, the United States offers wrapping-paper of a quality unsurpassed by any other producing country at a price commensurate with the quality.

In comparison with the volume of exports of the Scandinavian countries and Germany, the world's leading exporters of wrapping-paper, the United States exports are negligible.

Table F shows gross exports of wrapping paper from the Scandinavian countries and Germany for the years 1913 and 1918 to 1922 inclusive. Imports into these countries are negligible and have been omitted from the table.

Table F — Gross Exports of Wrapping Paper from Principal Exporting Countries

Country	1913	1918	1919	1920	1921	1922
	(in thousands of short tons)					
Sweden	109	82	61	141	64	131
Germany	94	*	*	68	†32	79
Norway	91	49	41	54	24	75
Finland	73	4	9	30	19	34

* Not available.

† May to December inclusive.

Sweden alone exported approximately fifteen times as much wrapping-paper in 1913 as did this country. Germany and Norway exported about thirteen times as much. This difference in the export development in the United States and these European countries is due to the fact that mills in this country have been developed almost entirely with the idea of supplying principally the domestic market while the mills of Scandinavia and Germany have generally been developed with the idea of supplying foreign paper markets. It is also true that manufacturers in this country do not like the terms of purchase and of payment offered in many foreign countries. The bulk

of Scandinavian and German exports go to adjacent markets in other European countries. Substantial quantities are, however, marketed widely in all parts of the world.

THE MANUFACTURE AND COLOURING OF BOX BOARD

By ARTHUR T. BRAINERD *

Paper board is a product made up of several layers or sheets of various kinds of paper stock, from which are made so-called solid fibre containers. Corrugated shipping cases are usually made of corrugated strawboard with a paper board liner. The term liner as concerns a box board designates the outside or face of the board and consequently the liner is usually specially treated, coloured and waterproofed. Paper board, as such, is the modernized machine made pasteboard of former years, but only with the advent of the multiple cylinder machine did the product assume any large degree of usefulness. To-day container board is used in the manufacture of boxes of every description for shipping practically every article of commerce.

Advantages of Box Board

The advantages of box board as container material are many. Standard sizes are made to order in large quantities by the box makers and shipped flat to the customer. It is then possible for large shippers to buy in quantities, ready made boxes in correct sizes without the necessity of having enormous storage space. Much time is saved in shipping merchandise as box-making is eliminated. Smaller packages can be used as units, facilitating handling and giving opportunity for taking advantage of parcel post rates when desirable. Advertising matter can be attractively printed on paper boxes and thus a valuable medium procured at practically no extra cost. This is a factor of considerable importance with manufacturers of nationally advertised goods having country-wide distribution.

The saving in weight of shipments is also of much importance. At a lecture on box board manufacture which the writer recently attended this point was brought out in an interesting manner. It was stated that a specially made fibre board box for shipping a typewriter weighed only five pounds. The usual wooden container weighs twenty-five pounds. As typewriters are usually shipped by express this difference in weight represents a saving of two to three dollars in transportation charges on each machine in a transcontinental shipment.

United States Government statistics show that by September 1920, the average production and sale of paper board has reached the total of 9,000 tons per day, or at the rate of 300,000,000 tons a year. The manufacture of paper board is now the largest branch of the paper industry, more than one-third of the capital invested, tonnage produced and value of product sold being credited to this branch of the industry.

* Of H. A. Metz & Co., Chicago. From the American Dyestuff Reporter.

An old lady who had been all her life crabbed and sour suddenly became the opposite. Asked the reason, she replied, "I have been all my life striving for a contented mind, and finally concluded to sit down contented without it." She made the mistake of trying to be happy.

PAPER CONSUMPTION A MEASURE OF CULTURE

Sir Frederick E. R. Becker, who is associated with many of the big paper firms of Great Britain, and interested in pulp and paper mills at Chicoutimi and other points in the province of Quebec said to the Gazette at Montreal.

"The world position of pulp and paper is a very interesting phenomenon."

"The United States of America are said to consume 2,500,000 tons of news and printing paper per annum. This consumption, according to official reports, is increasing at the rate of nearly eight per cent. annually. This means that each year an additional 200,000 tons of paper have to be supplied to the reading public of the United States, and a very considerable proportion of this supply comes from Canada."

A nation's consumption of paper, said Sir Frederick Becker, was said to be the measure of its culture. On this basis the people of the United States certainly led the world, with a gross consumption of fifty pounds of news and print paper per capita per annum.

At this rate, said Sir Frederick, the increased production in Canada, great as it was, would soon be used up.

"Everyone in Canada," said Sir Frederick, "knows from personal experience that they want and buy several times more newspapers, magazines and books today than they did twenty years ago. This same rule applies to South America and many other countries. It only wants the East to take to literature as they have to tobacco to raise a point of increase in the consumption of paper that will be hard to cope with."

With regard to these conditions Sir Frederick said that a restoration of trade conditions in Eastern Europe would immediately withdraw from North and South America such unnatural pulp and paper supplies as those of Germany, Czecho-Slovakia and Austria. In addition to this a Russia only tending toward normality would restore to Finland its natural export market.

"Hence," said Sir Frederick, "the huge growth in the consumption of paper for the near future must depend on the Canadian forests. In this respect I am always worried to see the meagre forest protection forces squandering their energies on the doubtful German theories of reafforestation. Protection against fire, and making the starting of a forest fire a criminal offence, condemned by law as well as by public opinion, seems to me to demand every cent that can be raised and every effort that can be made."

Sir Frederick said he thought the Chief Forester of Quebec had some time ago stated that for every tree felled by the axe nineteen were destroyed by fire. If this were still true he considered it a crime and a shame.

Use of Waste Product

As a recourse Sir Frederick Becker mentioned a recent invention by a French scientist, M. de Vain, for the manufacture of bleached straw pulp into writing and print paper by a process that made a considerable percentage possible. Canadian straw, he said, was largely burnt, but if this process eventuated it would prove a source of considerable secondary profit to the Canadian grain growers.

In this connection Sir Frederick Becker said he hoped to be able to get one or two mills under way in Canada. There was always, he remarked, a deep attraction in utilizing a waste product, while this process would bring a "sweetener" into many Canadian farm homes, and at the same time provide a new source of supply to the paper trade.

Planning The New Building

By PAUL M. ATKINS, Member of the Faculty of the School of Commerce and Administration, University of Chicago.

In "Industrial Management"

With the present high cost of building and even higher rents, business men must consider seriously the problem which the housing of an enterprise presents. If a concern decides to build it is confronted with the fact that its decision is not for the moment only, but that whatever conclusion it arrives at will affect the future even more than the present. If more money than is desirable is spent to attain the results that are sought, the excessive capital charges will be felt as long as the company continues to do business at that place, or until the excess valuation is written off through depreciation, or by some other means. It is prudent, therefore, that the expenditure of money for building, be scrutinized with the greatest care by those who are responsible for the success of the undertaking.

One of the common misconceptions that exist in regard to the construction of a factory is that the structure which is built of the best materials, which has all the latest devices for illumination, ventilation, and sanitation, and which is equipped with the most modern fixtures must, of necessity, be the best and most satisfactory building for the business. It certainly is true that all these matters are important and that they must be considered before the structure is finally erected, but, if they are the first details that are contemplated, and if they are not predicated on the careful consideration of certain other elements, it will only be by great good luck and a happy chance that the buildings will be satisfactory in the long run to the company for whom they are being constructed.

The very first question that must be thought about when the decision to build has been reached is that of the product and its manufacture. The factory should not be considered as a mould into which the business is being poured and which must conform to the shape imposed on it by the exterior force of the structure. Many buildings are built in this manner and that is one of the reasons why manufacturing is so expensive in many instances. A factory building should be thought more like the shell on the back of the turtle, which has grown to suit the needs of the animal inside. In other words, the building should be erected to meet the requirements of the business and the business should not be cramped and cabined to conform to the shape of the building that houses it.

One of the reasons why the burden rate is so high in some factories, and in some instances why the labor cost is above what it should be, is because the layout of the building makes such results inevitable. If it is necessary to transport the work in process two or three times as far as should be necessary, the cost to produce the goods under those conditions is increased by just so much. If the location of the stockroom means that the material has to be handled an extra time, the burden is increased. If the tool cribs are located in out of the way spots where it takes the workman more time than it should to get his tools every time he changes a job, the direct labor cost goes up. And the worst of it is, the excessive expenses are not for one day or for one week, but for just as long as the company continues to do business under those conditions.

The very first matter that should be thought of, therefore, when the question of building is under consideration is that of the product and the way it is made. Since the product has been carefully analyzed before the company was started, the results of that analysis are at hand to be used at this moment. The processes themselves must be understood before the work of organizing the company was begun, and their analysis should be known, but if it is not at hand they should be analyzed without delay.

Usually, however, nothing has been done to really plan out the sequence in which those manufacturing processes are to be carried out, for down to this moment there has been no need for this. This analysis of the order of operations has importance at many different stages of the industrial development of the company, and its thorough consideration at this point, will not only enable an adequate decision to be reached in this matter, but will be of service in several other connections.

The fundamental problem that lies before the man who is planning the construction of factory buildings, is to ascertain the definite amount of space that is needed to produce a definite quantity of goods in a definite time. This necessitates the knowledge of how long various processes of manufacture will take, as well as a thorough acquaintance with the manner in which they are carried on.

The real way to design a factory building is to lay out the interior arrangements as they should be, and then to build the structure around them. This is just as sensible as it is for the railroad that is building a new terminal to plan the layout of its tracks on the ground of the proposed edifice and then construct the building to house them. The absurdity of the railroad building the terminal first and then laying out the tracks inside is perfectly obvious, and yet most industrial concerns when they build do just the same sort of absurdly unwise thing that the railroad very carefully avoids.

In some cases the interior layout will be by consecutive process, and in others, according to the kind of machine. In all cases, however, the object should be to provide that the work in process travel the shortest possible path from the raw stores room to the shipping department. Internal transportation is one of the fundamental elements that must be considered in arranging the layout. Transportation involves not only moving goods around on the floor where they happen to be, but from floor to floor as well, and the latter is frequently the more important. Hence it is well to provide for the goods to start at the top floor and move down to the lower ones in sequence, using gravity to convey them whenever possible.

In any event, the mistake made by a certain well-known manufacturer should be avoided. He built a large, well-constructed, five story factory building, and the only means for getting goods from one floor to another was one very large elevator set exactly in the middle of one side of the long narrow building. The amount of time that was lost waiting for elevator service was almost beyond belief. Yet this building was put up by a manufacturer who wanted more room and who had experienced the lack of convenience of hired quarters; it was designed by a prominent firm of architects and erected by a well-known firm of contractors; and still this all-important detail escaped or was overlooked by all of them.

Another matter that must not be disregarded is the future growth of the buildings to accommodate the increase in business of the company. A concern cannot afford to tie up capital in buildings that it does not expect to use for a number of years. A good executive who is controlling the destinies of his concern should look ahead into the years to come, and foresee the growth of his company. It is inevitable that he will realize that more capacity will be needed, and he shows great lack of wisdom if he does not make provision for it. A small concern that started in a little old building on a small plot of land was successful. It grew and finally bought another plot of land adjacent and erected a new building thereon, but it did not take care to get all the land that it might have bought at that time. A large corporation next door proceeded to buy all the land on that side of the street and soon this little company found itself completely surrounded by its larger neighbor, and when it grew some more it was compelled to buy land across the street and dig a tunnel underground to connect the two parts of its factory.

This same lack of foresight happens in a variety of ways. Many are the concerns that build foundations of sustaining the weight of only two or three floors, and later want to add three or four more, but cannot without tearing down what they have and starting out anew. Many other concerns have built their power houses squarely in the way of the natural growth of their factory buildings when some other location might just as well have been chosen in the first place. All such questions require careful thought when building is being considered.

When these matters have been given due consideration, it is time to turn to the actual construction of the building. The expense of operation will be largely determined by the adequacy of the construction, for not only is depreciation very much larger in a poorly constructed building, but the actual cost of doing business therein is greater. Workers cannot put forth their best efforts in a place that is not comfortable. Abundant light, sufficient heat, good ventilation, adequate space, convenient toilet and wash-rooms — these are essential if the workers are to be expected to produce to the best advantage.

The various processes are greatly aided or hindered by many of these same conditions. Insufficient light results in poor inspection and inevitable subsequent trouble. Lack of adequate humidity in the case of textiles is a source of large loss in the course of a year. Flying dust will ruin the work of a varnish or paint shop.

The fire hazard is something that is receiving more and more consideration as business men are growing to realize that it is far less expensive to prevent fires than it is to pay for the damage that they do. Not only are goods destroyed but the company's business becomes disorganized and competitors get some, at least, of its trade. The modern sprinkler systems that have come into use so much of late are doing a great deal to solve this problem. Internal division walls and enclosed elevator shafts aid in lowering this hazard and should all receive consideration at this time.

It is quite impossible in this short article to more than mention some of the more important points that need to be thought about when the proposition of building is before the executives. It must be borne in mind at all times, however, that the building problem is essentially one of layout of the various processes, and, as Professor Edward D. Jones so aptly says: "The problem of layout is to discover such an arrangement as will secure the greatest convenience for the most important functions."

The task before the executive may be summed up thus. Given a certain sum of money, a definite piece of land, the necessity of providing for a predetermined output, and with future developments in mind, to provide a building that will permit the goods that are manufactured to be made at the lowest possible price.

SAFETY FLAG AT PORT ARTHUR



The prize banner awarded by the Ontario Pulp and Paper Manufacturer's Safety Association for the best accident prevention record was won in class A by the Provincial Mills at Port Arthur. They say it is nailed to the flag staff.

PAPER MAKING CHANGES HANDS

The well-known British magazine for the paper trade, entitled "Paper Making" which is now in its 42nd year, will be published hereafter by Trade Journals Limited, with address at 8 Baldwin's Garden, London, E. C. 1. The general appearance of the paper is much the same as previous issues, and the subscription price remains 5 shillings or $1.25 per year.

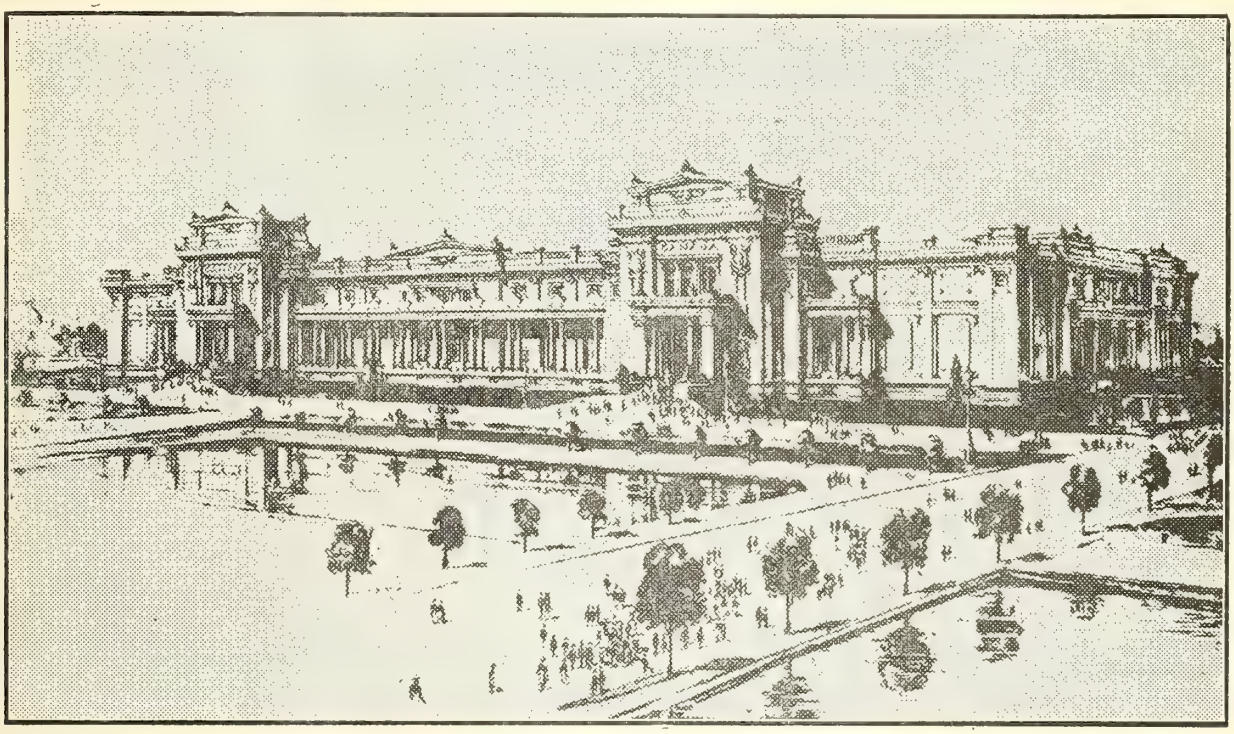
Reserve is power. He is wise who lives a good part of his life inside himself. Too much speech is weakness.

The British Empire Exhibition

The Share that Canada will have in this Mammoth Display of Empire Products and Resources

The following statement appears in the Commercial Intelligence Journal issued by the Department of Trade and Commerce, April, 21st, 1923.

"All the plans for Canada's participation in the British Empire Exhibition to be held in London, England, from April to October 31st next year, are practically completed. The Dominion Government will erect its own building — an imposing structure in Veo-Grec architecture — on a commanding site in Wembley Park, where the exhibition is to be held. Work on the erection of the building is to commence this summer, and every last detail linked with this great enterprise will be completed when the exhibition is opened to the public in April, 1924.



The Canadian Building

"The building will be 415 feet long and 300 feet wide, with a floor space of 124,500 square feet, and in it, through the medium of attractive displays and exhibits, visitors will have an opportunity to learn in an interesting and impressive way something of the extensive natural resources of Canada, the products of the soil, and the wide range of manufactured articles made within the Dominion. The resources and products of each of the nine Provinces and the two Territories will be displayed. The Canadian exhibit is to be financed, controlled, and directed by the Federal Government. The estimated cost is $1,000,000.

"On the same site as the Canadian Government building will be two additional separate buildings built by the Canadian National railways and the Canadian Pacific Railway, each with a floor space of approximately 10,000 feet. In these buildings Canada's two great transportation organizations will show the attractions and resources of the country served by their respective railway lines. Plans for all three buildings have been approved by both the Dominion Government and the official architects for the exhibition.

Attendance

Owing to the location of the Exhibition, to the ample period given for preparation, and to the advertising it has received, it is expected that the attendance will surpass all previous records, not only from the British Empire, but also from foreign countries. It is estimated that millions of people will attend including not only great numbers of British citizens and merchants, but also a representative number of visitors and merchants from many other countries.

Management

The management of the Canadian section of the Exhibition will be entirely in the hands of the Canadian Government operating through the Canadian Government Exhibition Commission, which has already made preliminary arrangements.

The Canadian Manufacturers' Association has taken a deep interest in this Exhibition and believes that it will provide a wonderful opportunity for the display of Canadian products in friendly competition with the products of other countries of the Empire, and that, therefore, no effort should be spared to insure that Canada's part will be creditably performed. It would be difficult to conceive of any single event that could have such great publicity value by reason of the attendance of an observant and intelligent population, or that could have so vitalizing an effect on Imperial trade as this great Exhibition, presenting as it will in graphic and striking form the produce and manufactured com-

modities of the Empire and reaching as it will not only domestic buyers in England and visiting merchants from other countries, but also the principals and buyers of the great export shipping houses of London which have been probably the greatest single factor in the development of Imperial export trade. The future of Canada's export trade will be greatly influenced by the variety and quality of Canadian exhibits.

The Canadian Pulp and Paper Association has engaged a full section of Show case space and has accepted the services of the editor of the Pulp and Paper Magazine to organize an exhibit representative of the whole Canadian industry. A bulletin giving particulars is being distributed and may be had on application.

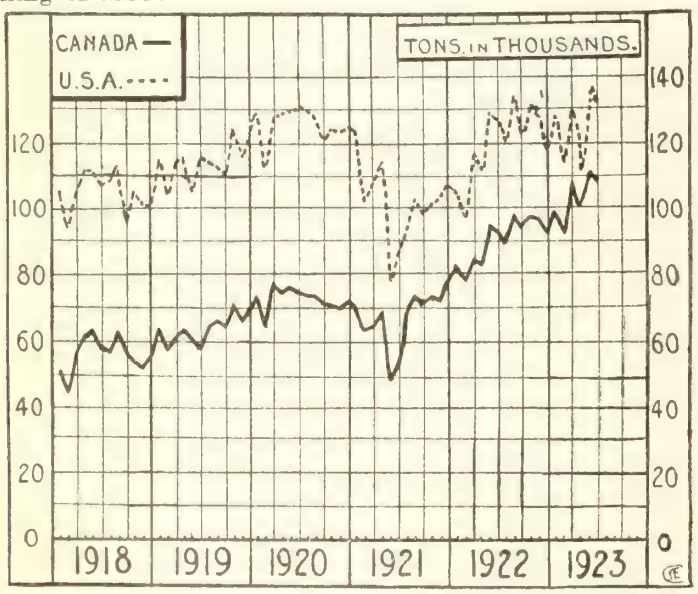
The natural resources of the Dominion will be shown in the Canadian Pavilion in conjunction with industrial section.

NEWSPRINT PRODUCTION IN JUNE SLIGHTLY LOWER THAN MAY

The production of newsprint by Canadian mills in June was 108,832 tons; U. S. mills produced 133,692 tons in the same month.

In both cases the total production was less than in the previous months, when new high records were established; the decrease, however, is chiefly accounted for by the shorter working month.

The accompanying chart, prepared by the Canadian Pulp and Paper Association, shows the production in Canada and the United States monthly from the beginning of 1918:



The total production for the first six months of the year is given below (Canadian figures revised up to date):—

	Canada	U.S.A.	Total (tons)
6 Months, 1923 . . .	621,897	760,636	1,382,533
" 1922 . . .	516,506	690,142	1,206,648
" 1921 . . .	373,988	615,448	989,436
" 1920 . . .	443,512	759,624	1,203,136

Canadian production for this year shows an increase of 40 per cent. over 1922; while the U. S. production increased 12 per cent. over last year.

U. S. Wood Pulp Output Increased 21.8 Per Cent

The U. S. Department of Commerce announces that the total consumption of pulp wood was 5,548,842 cords by 241 mills in 1922, as against 4,557,179 cords by 254 mills in 1921. The consumption of wood in 1923 increased 21.8 per cent., compared with the previous year, but decreased 9.2 per cent. compared with the consumption for 1920, which year was the most active in the industry.

More than 54 per cent. of the wood consumed in 1922 was spruce. Hemlock and yellow pine were next in importance, supplying 16.1 per cent. and 6.7 per cent., respectively, of the total quantity of pulp wood used in the year.

The production of wood pulp was 3,521,644 short tons in 1922, compared with 2,875,601 tons in 1921. Of the total amount in 1922, 1,483,787 tons were produced by the mechanical process, 1,374,319 tons by the sulphite process, 419,857 tons by the soda process, and 243,681 tons by the sulphate process.

Maine, Wisconsin and New York are the leading states in this industry. In 1922 these three states exported 56.8 per cent. of the total consumption of pulp wood and 59.7 per cent. of the total production of wood pulp.

BOOK REVIEW

THE PRODUCTION AND USE OF PRINTING PAPER: A Manuel for Papermakers and Printers. By Willy Grunewald, Berlin: Carl Hofmann. Price $2.00.

We have received a copy of a book entitled "Herstellung and Verarbeitung von Druckpapieren," whose author is the technical editor of the Papier-Zeitung. It is issued by the well-known house of Hofmann, Berlin, and is printed on a super-calendered white wood cellulose printing of excellent quality; the matter and illustrations are both good examples of the art. It is bound in a greenish blue paper board, with a cloth back, and contains 158 pages, including a full index, and a fairly comprehensive bibliography of the German literature of the subjects is added.

The author states that this work is the outcome of a lecture which he gave to the Berlin Typographical Society, on "The Making and Using of Paper," particularly with reference to offset printing. Many of his hearers wished a fuller treatment of the subjects and the book before us is the result.

The author expresses a hope that he has succeeded in telling the papermaker what the printer must demand and the printer what the papermaker can accomplish. A perusal of these chapters will convince the reader that he has fulfilled his desire with much success.

The book commences with a short historical introduction to the manufacture of paper, and to the invention of printing and the press. Modern paper-making is then dealt with concisely, occasionally directing the reader's attention to the bearing of the process of manufacture on the printing quality of the product.

The preparation of the printing ink is suitably treated; then the machines used by printers are described, along with the various classes of printing, as from type, engraved plates, stone, gelatine, etc., followed by a careful description of the actual working of these different processes, with all the time a steady eye on the peculiarities of the paper and ink to be used. We have had inquiries for just the sort of information contained in this chapter. A very good chapter on paper testing is included.

This is a handy little volume which should prove useful to those engaged in both industries. It is well illustrated throughout. The diagrammatic illustrations of paper and pulpmaking are particularly useful to the uninitiated. One fine example of three-color work is given, and there are further colored pages to illustrate the use of various colored inks.

Western Chemical Industries

(Prepared under the Direction of Dr. Charles Camsell,
Deputy Minister of Mines, by Dr. A. W. G. Wilson,
Chief Engineer, Mineral Resources Division.)

The Prairie Provinces of Canada are classed primarily as agricultural areas and up to the present time they have not been considered seriously as probable contributors to the mineral wealth of the country. Recently, however, the resources of these provinces in nonmetallic minerals, such as clays, coals, oil, gas, and the sodium and magnesium salts, which occur in the numerous alkali lakes and sloughs throughout the area, have been attracting the attention of capital with the result that considerable activity is evidenced in all these lines.

The increased interest in the alkali deposits of Western Canada has induced the Mines Branch of the Department of Mines, Ottawa, to institute a detailed investigation of these deposits with a view to determining their possible economic value and the extent of reserves. The work has now been in progress under the direction of Mr. L. H. Cole during the last two field seasons.

Natural occurrences of soluble mineral salts are known in the provinces of Manitoba, Saskatchewan, Alberta, and British Columbia, either in the form of bedded deposits or as brines. Some are of considerable extent and are probably of sufficient size to warrant commercial exploitation, provided economical methods of recovery can be developed and sufficient markets can be established.

Three of these deposits are being operated or will shortly be operated in the Prairie Provinces and plans are under way for the development and operation of a fourth deposit.

At Dana, Saskatchewan, a half million dollar plant is nearing completion, to extract salt cake and other chemical products from the brines of Muskiki lake, formerly Houghton lake, 23 miles west of Humboldt, Sask. The company operating this deposit is The Salts and Chemicals, Ltd., controlled by Canadian and United States interests. The main plant of this company is at the deposit at the lake and they have a refining plant at Kitchener, Ontario. When this plant is in operation it is estimated that the output will be 30,000 tons of salt cake per year besides Epsom and other salts recovered as by-products. A small village has been erected at the lake with housing accommodation for 60 men. When the plant is working at fuller capacity 100 men are to be employed.

Sodium Sulphate Plant

At Frederick lake, five miles southwest of Dunkirk, Sask., and 38 miles from Moose Jaw, Sask., another salt cake recovery plant has been erected by The Bishopric and Lent Co. with head offices at Cincinnati, Ohio. This plant is practically completed with a capacity of fifty tons of salt cake per day, and as soon as it proves commercially successful, further units are to be added to increase the output to 200 per day. At the present time, twenty men are employed at this plant.

At a lake five miles north of Fusilier, Saskatchewan, an experimental plant has been operated by a company called Soda Deposits, Ltd., with head office at Calgary, Alberta. This deposit, although somewhat smaller than some of the other deposits, contains sodium sulphate in a very pure state and several shipments have already been made. This company hopes in the near future to be in a position to put its product regularly on the market.

In British Columbia, the Basque Chemical Co. is operating a series of five lakes situated fifteen miles west of Ashcroft B. C. From these lakes they are excavating crude magnesium sulphate (Epsom salts) which is shipped to Vancouver where it is refined and sold as medicinal salts and to the tanning industry Plans are now under way for greatly extending the development of this deposit.

In the vicinity of Meadow lake, fifty miles north of Clinton, B. C., the Lillooet Soda Co. is operating a sodium carbonate lake and shipping their product to Vancouver over the Pacific Great Eastern Railway. This material is being disposed of at the present time to the soap manufacturers of the Pacific coast, but plans are under way to dry the material at the lake and increase the output.

The Main Products

The several main products which may be expected to be produced from these deposits are Glauber's salt, salt cake, Epsom salts, soda ash, and baking soda.

Sodium sulphate in the anhydrous form, more commonly known by its trade name of salt cake, finds its chief use in the manufacture of sulphate pulp, in metallurgical work in the refining of nickel, in the manufacture of window, plate, and bottle glass, and in making water-glass. In the hydrous form, it is marketed as Glauber's salt, and as such is used in tanning, in the textile industry as a mordant, and in medicine.

Hydrous magnesium sulphate or Epsom salts is largely used in the cotton trade for warp-sizing; it is also employed for medicinal and agricultural purposes, and in dyeing with aniline colours, since goods thus treated are found to withstand the action of soap better than those not so treated.

Sodium carbonate in the anhydrous form, known under the trade name of soda ash, is one of the principal forms in which sodium salts are used in the alkali industry, since it frequently forms the base from which other sodium compounds are made. It is used extensively in the manufacture of glass, soap, and dyes, as well as in cleansing preparations, metallurgical processes, and tanning. In the hydrous form it is marketed under the trade name of sal soda, washing soda or crystal carbonate and as such is used in softening water and to replace soda ash when purity is essential. Sodium bicarbonate or acid sodium carbonate, commonly known as baking soda, is generally marketed in a very pure form, and finds its principal use for making baking powders.

The operations of these companies tend to bring before the public the possibilities of the western provinces in the mineral field and should form the nucleus of the ever increasing industry which in time should prove of great importance to the whole of Canada.

MANUFACTURING FACTS ON PULP STONES

(From The Lombard News Letter)

The manufacture of pulp stones during recent years has become very much more complex and difficult. Years ago when running conditions were moderate, soft grades of stone were practicable, but with the increase of speed and pressure, pulp stone manufacturers have been forced to produce stones of stronger and harder rock to meet these severe conditions. To further complicate matters, nature has "thrown the monkey wrench into the gears" by very thoroughly and successfully breaking up the deposits of stone that, so far as quality is concerned, are particularly adapted to modern pulp grinding. This is particularly true in the English quarries, where in practically every instance deposits of stone suitable for pulp stones have been broken laterally and vertically by the stretching and contracting of the earth's surface to such an extent that it is almost impossible to find blocks sufficiently large to make the dimensions required.

To be specific, the pulp stone manufacturer's first problem is the overbearing or material which lies on top of the solid rock. This material, which runs into large tonnage, is usually of such a nature that it cannot be handled by steam shovels, and therefore it is entirely a question of manual labor in conjunction with steam cranes. This overbearing in many instances is forty to fifty feet thick, in some cases even more than this, and this material must be all removed before any pulp stones can be produced. The manufacturer never knows what the condition of the rock may be until after this work has been completed.

The rock, as above mentioned, in the English quarries is very much broken up and the next process requires considerable skill and long experience. Ragged, ill-shaped blocks must be drafted out and carefully plotted to obtain the required finished dimensions, and it is uncanny what a thorough practical knowledge of solid geometry is shown by the men who have this in charge whose educations have been limited to the "Three R's."

After the rough blocks are cut, and this cutting by the way is done entirely with wedges because of the risk of injury to the stone by the use of powder, they are placed in saw gangs and vertically sawed into the approximate thickness required. The blocks are then laid down under circular saws which saw out the circumference to within one-half inch of the finished dimensions. The stones are then ready for finishing, and are placed on semi-automatic finishing machines which cut the face and sides very accurately; especially insuring that the two sides of each stone be exactly parallel.

Several inspections have occurred up to this point, but after the stones are finished the final inspection takes place, and if the stone passes this very rigid inspection it is then put under a holing and recessing machine which finally completes the process of making the stone.

Referring again to the first paragraph of this article, all of these processes years ago were accomplished very rapidly owing to the nature of the stone, but the hardness of the modern stone makes each process more difficult. Saws, boring machines and finishing machines have to be two to three times as heavy as formerly, and the speed with which the work is done is comparatively slow. The finished product, however, is very much better than in former years, both in regard to finish and quality. The inspections are very rigid and are made so largely because of the demand by the mills for stones that are absolutely free from defects and especially adapted to their individual requirements. This latter feature is something that has been given a great deal of attention during the past few years and the improved quality is largely due to the records of mistakes of former years.

The pulp-stone buyer years ago was influenced largely by the life of the stone or the number of grinding hours that the stone was capable of. Today, however, he is influenced by other items which are of even greater importance. While the words "service" and "efficiency" have been much abused, we doubt if any industry has profited as much by scientific study of production costs as the paper trade. The modern buyer is influenced, aside from the grinding hours per stone, by the daily production, the number of stone installations per year, the loss of production due to stone trouble and frequent installations, the quality of pulp produced, the percentage of slivers, and last but not least, the annual cost of grinder repairs from using producer who is selling stones on a service rather than inferior qualities of stone. Therefore the pulp-stone price basis must produce a stone containing a very satisfactory number of grinding hours under severe conditions. The daily production must be high, as a few hundred pounds make a tremendous difference in the annual production. He must produce stones that prevent as many new installations per year as possible in order to minimize loss of production, and he must be in a position to supply the individual mills with the specific quality of stone that they require for the quality of pulp that they wish to produce.

Too much work, with no vacation, justifies a small libation, here's a toast, now drain your glasses, work is the curse of the drinking classes.

SWEDISH MINISTER TO U. S. A. VISITS CANADIAN MILLS

The Hon. Axel Wallenberg, Swedish Minister to the U. S. A. accompanied by his son and Mr. Gustof Asplund, representative of the Swedish Cellulose Association, has been on a visit to some of the American and Canadian pulp and paper mills. These gentlemen visited Quebec, Three Rivers, and Grand 'Mere, and also called on Mr. E. Beck, manager of the Canadian Pulp and Paper Association, Montreal. It may be mentioned that the Hon. A. Wallenberg is interested in the Swedish pulp and paper industry, and will shortly pay a visit to Sweden.

While in Montreal, the Minister discussed trade conditions in Sweden, and also spoke of the developments in Canada. He said that he had been impressed with industrial expansion here, and with the apparent forestry resources of Canada. At the same time he was surprised at the lavish way in which we are using those resources, and could not appreciate why greater precautions were not taken to prevent forest fires and other losses. He went on to say that Sweden did not allow the export of pulpwood, the policy of the country being in the direction of encouraging the manufacture and utilization of the raw material for finished products, instead of exporting that material.

The party was met at Montreal by Mr. Geo. W. Sisson, former president of the American Pulp and Paper Association, and his son, who motored back to New York with Mr. Wallenberg and Mr. Asplund, by way of the Adirondacks, visiting various paper plants en route. Mr. Wallenberg's son left for the Rocky Mountains, prior to entering Harvard University.

During his stay in Montreal, the Minister entertained a number of friends at dinner at the Ritz Carlton Hotel, the party including Mr. Edward Beck.

THE FOREST RESOURCES OF THE WORLD
A Compilation of Unique Value

Occasionally a book is produced to which the term "Monumental" may be applied without serious exaggeration. This is true of "Forest Resources of the World" which is the result of generous co-operation on the part of the United States Department of Agriculture, the National Research Council and the McGraw-Hill Book Company. Never before has there been brought between four covers (there are two volumes) the essential facts and available statistics which show the present status of the world's timber supply and consumption in terms of an understandable common denominator. All areas are given in acres and volumes in board feet, cubic feet or cords as is most appropriate to the particular subject under consideration, and are frequently given in terms of two units to facilitate comparison.

Some idea of the magnitude of the undertaking may be gained from the statement that in addition to a general summing up for each Continent there are separate discussions of the forest situation in each political or other important sub-division of the world. In other words, besides an excellent summation of the forest resources of Europe as a whole there are sections devoted to detailed exposition of the status of each of the 29 political or geographical sub-divisions of that Continent. The same treatment is given to 35 divisions of Asia, 50 divisions of Africa, 20 divisions of Australia and Oceanic, 13 divisions of South America and 29 divisions of Central America, North America and the West Indies, making a total of 176 regions for which there is an attempt to show in each case the forest area, the annual growth and the annual cut. A detailed discussion including the most important statistics and best estimates where statistics are lacking covers the topics of forest area, character and distribution of forest, character of ownership, annual growth, annual cut, exports and imports, domestic consumption, progress in forest conservation and probable future developments. There is also a discussion of the sources of other valauble forest products such as resins, gums, balsams, dyewoods and edible products.

The final result is two clearly written, well-manufactured and typographically attractive volumes, which contain 26 colored plates, showing forest classification in the most important regions, more than 400 statistical tables and a total (including an excellent index) of nearly 1,000 pages numbered consecutively from the first page of the first volume to the last page of the second volume.

Some conclusions of the authors, Messrs. Raphael Zon and William N. Sparhawk, Forest Economists of the United States Forest Service, are of especial interest. For example, it is stated that for the world as a whole the coniferous forests occupy about 35 per cent. of the total forest area, the temperate hardwoods 16 per cent and the tropical hardwoods about 49 per cent, but that 95 per cent of the coniferous forests, upon which the world depends for its construction material and most of its paper, are in the north temperate zone as are 89 per cent of the temperate hardwood forests. This zone has three-quarters of the world's population and consumes an even greater share of the timber used in the world.

After a discussion of the probable future needs for agricultural land and further increases in the demand for timber the conclusion is reached that for the world in general

> "The forests will continue to be reduced in area, and the quality of those remaining will tend to deteriorate, until the timber resources become so badly depleted that steps are taken to prevent further destruction and to build them up on a permanent basis. The history of forestry in most countries shows that effective steps toward forest regulation are seldom taken until a country's forest resources have become so depleted as to make it anxious regarding its own future supplies of timber."

At the present time it is said that only 10 per cent or 15 per cent. of the world's timberland is being handled as a renewable continuously productive resource, while an additional 15 per cent. or 20 per cent. is more or less protected from destruction, but that 65 per cent. to 75 per cent. receives no care whatever. By far the greater part of the conservatively managed timberland is in public ownership and public regulation of private forests, with few exceptions, is intended only to those classed as protection forests whose preservation is a public necessity. On the much-debated question of the public regulation of private forests, the following quotation is pertinent:

> "That it is much more feasible to regulate cutting on public forest lands than on those belonging to private individuals have been proved by the experience of several countries. Norway, France, Germany, Belgium, Italy, and others have been gradually taking back into public ownership the private forest lands whose preservation can not safely be entrusted to private owners, and only recently the United States has undertaken a similar policy, in the purchase of forest lands by the Nation and the individual States. Canada, on the other hand, has retained most of her timberland, and can adopt conservative methods of handling it without being hampered by conflicts with private property rights. In this respect most of the tropical countries have the advantage of still owning the greater part of their forests. As soon as economic conditions require it they will be able to profit by the experience of the older nations, and to organize their forests as permanent sources of timber both for domestic consumption and for supplying the world markets."

It is easy to criticize minor details in an undertaking of such size, but the value of this publication and its scope so far exceed anything hitherto attempted that the highest praise for substantial accomplishment is due to all who participated in the preparation and publication of these attactive volumes. There are, of course, many cases in which accurate statistics and even statistics of any kind are unavailable. Under such circumstances, it is most helpful to use the best estimates that can be made until better can be obtained and this the authors have not hesitated to do. The publication of the results of this study of the forest resources of the world comes at a time when such information is greatly needed and when more than ever before the people are waking up to a realization of the necessity for greater care for a basic natural resource.

A study of these volumes convinces us again that the United States and Canada, which once possessed the greatest forest wealth on the globe, cannot safely rely on outside sources for their future raw material for lumber, paper and a multitude of other wood products, but that they can and must produce their own. This work of reference should be on the book-shelf of every student of forest economics, every producer of wood products and every citizen who takes an interest in the sound development of the natural resources of his country.—R. S. Kellogg.

Note: The Pulp and Paper Magazine is trying to assist in the distribution of this excellent work and will deliver the two volumes, postpaid on receipt of $12.

The poor may be as covetous as the rich. Greed and love of money depend not upon the amount possessed. The little of one man may be as much his idol as is the abundance of another.

Woodlands Section

THE PULPWOOD COMMISSION

That there are others who do not like the way the pulpwood crisis is being met by the Government is shown in the following letter by "Canadian" in The Gazette, Montreal:

Sir,—The ineptitude of politics in dealing with a purely economic problem of vast import to the country's welfare was never better illustrated than by the order-in-council issued from Ottawa a few days ago appointing a commission to enquire into the forest resource of Canada with a view of determining the need or otherwise of an embargo upon the exportation of pulpwood and instructing the commissioners so appointed in their duties. It affords a fair illustration of the manner in which such vital matters as the railway problem, the immigration problem, the land problem, the public debt and other national issues are being trifled with, to the great injury of Canada's present well-being and to the jeopardy of its future solvency.

The order-in-council names five presumably very excellent gentlemen, none of whom, so far as the public is aware, has any practical knowledge of the subject which he is set to investigate, or is, by reason of his calling, competent to deal with a matter demanding much expert and technical understanding. One is a tobacco manufacturer, two are town lawyers, one is a lumberman and the fifth is a contractor. The only one whose vocation may be considered as bringing him, even remotely, in touch with the science of forestry is the lumbermen — and lumbermen, as is well known, are and always have been hereditary foes of timber conservation.

But it is when one comes to consider the duties devolving upon the commission that the hollowness of the proceeding becomes apparent.

The commissioners are required to enquire into and report upon (1) the extent in each province of wood of various kinds available for pulp; (2) the quantity of wood so available on lands owned by the provincial Governments and subject under provincial laws and regulations to restrictions requiring the partial or total manufacture of such wood in Canada; (3) the quantity of wood so available on lands owned by the Dominion Government and subject under federal laws and regulations to restrictions requiring partial or total manufacture in Canada; (4) the quantity of such wood on other lands and the conditions under which such lands are held, whether by ownership or lease, whether by corporations or individuals, whether by citizens of Canada or other countries; (5) the quantity of pulpwood produced in each province of Canada during the past ten years, showing the portion used in Canada and the portion exported.

All of the information at present available on these subjects, or that can be made available without the expenditure of a vast amount of time and money, is now carefully filed away in the archives of the several departments of the Government at Ottawa or is obtainable at the cost of a sheet of paper and a two-cent stamp from the governments of the several provinces.

A $20-a-week clerk in the employ of the forestry division of the Department of the Interior at Ottawa should be able to dig up all the required information, so far as is available to collate it and present it for inspection within the course of thirty-six hours.

Instead, a commission is to rove about the country, for months probably, the chairman to be paid $35 a day and each of the other commissioners $25 a day, with $15 extra as an expense allowance, seeking for information which is already available in Ottawa right under the Government's very nose.

Left alone, the acting director of forestry, who is attached to the commission as its secretary, and who, although granted no extra emolument for his services as such, is to receive $15 a day expense allowance while away from Ottawa, could, in the course of a few hours, compile a report giving all the information asked for — again, in its only at present, available form — without leaving his office chair.

But Parliament, at the instance of the Government, voted a preliminary grant of twenty thousand dollars — added that amount to a budget already over-extended and increased by that amount the burden of an already over-taxed people — and so the enquiry, however useless and impotent it may prove to be, must proceed. It may cost four or five times that amount before its work is completed.

It is not necessary here to go into the intrinsic value of the information which the commission is instructed to obtain, although its usefulness as a basis on which to formulate a national policy of forest conservation is open to question, since its authenticity has never been accepted by those best qualified to judge. It is based on rule-of-thumb averages and estimates rather than on actual knowledge. No really authentic or reliable inventory of Canada's forest resources exists, nor could one be made without years being consumed in its accomplishment, the employment of numerous experts and the expenditure of many thousands of dollars, involving a task far beyond the powers and scope of the present commission.

But the order-in-council goes beyond this. It shifts from the shoulders of the Government the responsibility of making a national policy, upon which the continued prosperity if not the existence of the country's most important manufacturing industry depends, and transfers it to a board of private individuals!

The commission is to determine, in the words of the order, "The question of the prohibition or restriction of the export of pulpwood from Canada."

Those who complain that Ottawa lacks initiative, leadership and the courage to mark out its own course in national affairs will find in this remarkable order-in-council ample support for their contention.

No time limit is set upon the activities of the commission. It may take months or years to accomplish its task. Meanwhile, the raid on Canada's fast-diminishing pulpwood resources for the benefit of foreign exploiters, goes on unchecked and with increasing vigor.

So far as our forests are concerned, the "whisper of death" has developed into a roar of destruction.

The July trade returns, just made available show that 151,794 cords of pulpwood — a century's growth from at least 30,348 acres of land — were taken out of Canada during that month, as compared with 90,966 cords during the corresponding month of last year, an increase of 60,829 cords or 67 per cent. over last year.

The case for an embargo on the export of pulpwood is to be found in the monthly trade returns of the Department of Trade and Commerce and not in the needless peregrinations about the country of a political commission, whose chief function so far has been to relieve the Government of the necessity of making an embarrassing decision.

These returns supply indisputable evidence that the forest industries of Canada are being drained of their very life-blood for alien benefit.

While Canada is thus being raided of one of its most vital raw materials, and while our pulp and paper industry has about reached its maximum development, owing to the rate at which our pulpwood is being depleted, it is illuminating to note that Newfoundland — where an embargo on the export of pulpwood has for many years been a part of the statutory law of the land — is the scene of a pulp and paper development now in progress that will rival any now existing in Canada, the governments of Great Britain and Newfoundland having joined in guaranteeing a capital investment of twenty millions of dollars for the purpose.

Without its embargo on pulpwood, Newfoundland, without any question, would long since have been denuded of her forest resources, which alone make such a development possible, in the same way that Canada is now being denuded of hers.

URGES STATE FORESTS

Winnipeg, August 20.— In relating the difficulties experienced by the Allies during the war from lack of forest reserves, General Lord Lovat, chairman of the British Empire Forestry Conference, declares the possibility of another emergency and demands action to forestall danger that might result from a shortage in the future. He made this declaration while addressing a joint luncheon given by the Manitoba Government and the Canadian Club in honor of the delegates to the conference.

Canada was in the most favorable position at the present time of any country in the world for forest cultivation. Lord Lovat said, and he advocated state forests for the Dominion, where experiments in applied research could be made on a commercial instead of a laboratory scale.

The delegates were welcomed to the province by John Bracken, Premier of Manitoba, and Lieutenant-Governor Sir James Aikins. The party leaves this evening for Indian Head and Regina, and the tour will conclude at Vancouver on September 7th.

BARNJUM CHALLENGES GOVERNMENT

Editor, Pulp & Paper Magazine.

Dear Sir:

Of all the extravagant farces foisted upon the Canadian people by the present Government the recently appointed pulpwood commission probably takes the lead.

In the first place there was absolutely no necessity for any commission to enquire into a matter that the members of the Government have repeatedly stated they knew all about. I made the offer to the Minister of Finance in more than one occasion that if he would select an independent, unbiased committee I would take them on a four months' trip across our supposedly wooded areas, at my own expense, and if they did not report conditions with regard to Canada's wood supply, after a careful investigation, more alarming than as stated by me, I would never mention forest conservation to him again. The Minister's reply was that he did not question my statements and believed them all. Another Cabinet Minister stated on the floor of the House that if drastic steps were not now taken, our forests would soon be but a memory. Other prominent Ministers have stated there was no answer to my arguments. What need then of a commission?

* * *

There can be only two reasons for the appointment of this commission, namely, the furnishing of political appointments, with large emoluments to partisan friends, and — the delay of any action on the part of the Government for a sufficient length of time to allow Americans to carry away last of our most available and valuable pulpwood. The Americans, with their usual acumen, have proceeded with lightning-like rapidity, to take advantage of the opportunity with a vengeance by immediately shutting down woods operations in their own country and transferring all cutting to the Canadian side.

The personnel of the commission consists of a city manufacturer for chairman, with the balance of the commission made up of two city lawyers and one lumberman. The farmer or settler, about whom the Government pretended to be so solicitous, has no representative. The appointees are no doubt all very estimable gentlemen, but they are not of the calling that an ordinary business man would select to investigate the pulpwood situation.

The first appropriation for the expense of the commission is twenty thousand dollars, but with the amount of work laid down, which should take two years to complete, it will involve several times this amount, while the Government could have obtained all the information asked for gratis through its own Forestry Branch.

* * *

While the Government has been deciding as to which of their friends should receive the rich plums, a loss of thirteen million dollars has been suffered by Canada through the export of unmanufactured wood. These exports are now going out of the country at the rate of two million cords annually, based on the Government report for June, and will undoubtedly increase to an even greater figure in anticipation of the Embargo being applied, thereby hastening the day when Canada will be forced to import high priced newsprint from the United States. In the meantime Canada is actually suffering a loss of six million and a half dollars monthly, or seventy-eight million dollars annually, through this export of unmanufactured wood.

This pulpwood commission will go down in history as one of the most costly commissions ever foisted on the Canadian people.

I read a statement in the press to-day which was put out by some of the enemies of Canada that timber is growing in this country twice as fast as it is being cut and destroyed, and this is merely a sample of the propaganda that is being carried on with the one object in view of putting the people to sleep while our last available trees are being shipped out of the country. If this statement were true there would be more standing wood in Canada to-day than there was a hundred years ago. In fact, the forests would be crowding the people into the ocean. Instead of which our woods operators are to-day scouring the upper reaches and very headwaters of our rivers, cutting small trees where it takes as many, in some cases, as fifty trees to make a cord of pulpwood, and where the distance is so great from the mills that it takes two and three years to drive the wood to its point of manufacture, and the same kind of wood, which really belongs to our grand-children and not to us, is being cut and hauled by rail and water 600 to 1,000 miles.

* * *

This is the answer to these enemies of Canada and to the Government to show the absolute childishness, folly and utter waste of the people's money in appointing a commission to enquire into a matter that is so perfectly apparent to the merest schoolboy.

I am not worrying so much as to how soon the Government will put the embargo in force as to where our pulp and paper mills are to obtain a wood supply in five years from now, some of them being already out of wood on their own watershed.

The annual increases in the destruction, consumption and exports of pulpwood are so appalling that unless immediately checked will end in bankruptcy.

* * *

So far as the embargo is concerned the friends of good government should rejoice in every day's delay on the part of the Government in its application of this measure, as no amount of American campaign funds will change the result in the next general election.

I call upon the Prime Minister to ask for the resignation of any members of the Canadian Parliament who are receiving fees from foreign corporations — corporations whose interests are diametrically opposed to the interests of the Canadian people, who have hired and are paying them to protect the interests of Canada. It may be permissible for members of the House of Commons to retain their seat while at the same time acting in the capacity of solicitor for a Canadian corporation, but certainly not for foreign corporations whose one great desire is to rob Canada of her birthright.

I call upon the Government to take a plebiscite on the question "Shall Canada continue to be a hewer of wood or a manufacturer of her own raw materials?"

I challenge the Government to appeal to the people on this one question.

I challenge the Government to appeal to the people on their record or entire lack of any record except as debt and tax raisers.

Party politics mean nothing to a debt-ridden, overburdened, taxed-to-death people. Men and measures are the cry to-day. —Frank J. D. Barnjum.

He who wants the most important place he can get in the kingdom of God on earth is qualifying for the least important place in the kingdom of God in heaven.

BROMPTON BUYS DOMINION LIME

(Special to The Gazette.)

Sherbrooke, August 8. —It is officially announced that the Dominion Lime Company, one of the largest shippers of lime in the Dominion, has passed into the hands of the Brompton Pulp and Paper Company. The paper company, one of the largest users of lump lime, is understood to have paid $50 a share for its controlling interest and an offer is being made to other shareholders on somewhat similar lines. The Dominion Lime Company, established nearly forty years ago, has been operating without interruption since the time of its original activities and the plant, located at Lime Ridge, Que., along the Maine Central, is one of the most modern of its kind in the Dominion.

The company is one of the largest shippers of lime in the country, and manufactures the famous "Dudswell" brand, which, is a very high grade product and analyses in some instances as high as 99 per cent pure lime, while it is unsurpassed for strength and whiteness. Lump lime is shipped in bulk as well as in wooden and steel barrels, while crushed limestone for fluxing purposes represents another product. The company also manufactures all grades of pulverized limestone for agricultural purposes.

It is interesting to note that, owing to the large demand for hydrated lime, the company is at present constructing a modern hydrating plant. Hydrated lime replaces, to a large extent, the ordinary lump lime and is used as a wall finish, as well as for general building purposes. The company employs some fifty hands the year round.

The old board, which has returned, was as follows: President, James MacKinnon; directors, E. L. Stewart Patterson, Colonel H. R. Fraser, Senator R. H. Pope, W. S. Dresser, M. W. Mitchell, John C. Spring, of Boston, and A. F. Fraser.

The new board is as follows: F. N. McCrea, M.P., E. W. Tobin, M.P., C. C. Wilson, W. N. Munroe, C. G. Greenshields, H. W. Beauclerk, and J. A. Bothwell. A meeting will be held towards the end of the month, at which the new officers will be elected. James MacKinnon has agreed to continue as president of the company until August 31st.

Mr. MacKinnon has been president of the company for the past several years, replacing the late William Farwell.

It is understood, on reliable authority that there will be no change made in the name or management of the company and A. F. Fraser, who has been connected with the company for the past ten or twelve years, as general manager and secretary-treasurer will continue to act in this capacity.

Among the original directors of the Dominion Lime Co. were William Angus F. P. Buck, C. A. French, W. W. Bailey, Hon. G. J. Robertson, Hon. Frank Jones, Geo. Van Duke, J. R. Woodward and the Hon. W. B. Ives, all well known throughout the Eastern Townships. The change in the controlling interest, as outlined above, has been confirmed by officials of the Dominion Lime Company, as well as of the Brompton Pulp and Paper Company.

"I jist like to let her in at the door," said an Irish maid one day, of a woman we know, whose face was always cheery and bright; "the face of her does one good, shure."

PULP AND PAPER NEWS

The plant of the International Fibre Board Company, wall board manufacturers, at Penetanguishene, Ont., was totally destroyed by fire on Aug. 19. When the alarm was sounded at 3.30 o'clock in the afternoon the pulp piles of the company were a mass of smoke. In the outer walls of the building is a fan to carry off the dust from the factory, and firemen think that this fan in action caused the flames to spread to the building. The fan was shut off too late to save the building. The company was preparing to enlarge its plant and to employ 300 men this season. W. H. Shaver is the general manager.

According to Hon. T. W. McGarry, Toronto, of the Whalen Pulp and Paper Mills, Ltd., the various mills of the company have been operating at capacity during the past year. One of the additions to plant was the installation of a complete oil-burning system in the company's mill at Port Alice. President McGarry expects to leave shortly for the Pacific Coast and will attend a meeting of the shareholders to be held at Vancouver within the next few weeks. In Toronto last week it was officially denied that the company had any connection with the Home Bank which closed its doors in Toronto a few days ago.

Considerable damage was caused to the electrical equipment of the mill of the Spanish River Pulp and Paper Mills, Limited, at Sault Ste. Marie, Ont., on Aug. 21 through a short-circuit in the company's lines. The city was plunged in darkness for over an hour and the street cars were stalled for lack of power. The damage amounted to several hundred dollars and was soon repaired.

In conversation with the Pulp and Paper Magazine of Canada in Toronto last week, Joseph Kilgour,, President of Kilgour Bros., Limited, paper bag manufacturers and paper merchants, confirmed the brief statement in the press that the company would erect a paper bag making plant at Windsor Mills, Que. The new structure will be 90 x 150 feet and will be three storeys in height. It will be designed for paper bag manufacture and for warehouse purposes and will be erected on property adjoining the present plant of the Canada Paper Co. Work has already been commenced and the firm expects to have the new factory in operation inside of three months.

David F. Robertson, of the Canadian Paper Board Company, Limited, Montreal, was a business visitor in Toronto last week.

Discussing the report that the Fort William Paper Company were seriously entertaining the idea of doubling their capacity in their plant at Fort William, J. G. Gibson, Toronto, secretary of the company, said last week that while the matter had been in the air for some time it was no nearer consummation now than it had been some months ago. He stated, however, that the directors would meet in Fort William in a week or ten days time and it was possible that the question of extending the mill might come up then — and again it might not. In fact Mr. Gibson said that the visit of the directors to the mill this month would have no special significance as far as extending the present plant went.

Directors of the Spanish River Pulp and Paper Mills, Limited, will gather at Sault Ste. Marie, Ont., next week and some days will be spent in inspecting the company's mills at the Soo, Espanola and Sturgeon Falls.

Col. C. H. L. Jones, of Sault Ste. Marie, Ont., general manager of the Spanish River Pulp and Paper Mills, Limited, was a visitor in Toronto last week.

John G. Sutherland's many friends in the paper trade in Toronto were pleased to greet him again last week on the occasion of a visit to the city, he having motored over with his wife from Dayton, Ohio, where he is connected with the Mead Sales Company. Mr. Sutherland was one of the original salesmen of the old Spanish River Company at Espanola and is widely known throughout the Ontario paper trade.

The Toronto Club of Printing House Craftsmen held a luncheon meeting at Scarboro Beach Park, Toronto, on August 22, when delegates were appointed to attend the Buffalo convention August 30, 31 and Sept. 1. A big delegation from Toronto is assured.

The city council of Fort William has agreed to deliver daily 1,500,00 gallons of Loch Lomond water to the property of the Great Lakes Pulp and Paper Company at the Neebling boundary. The city is to provide the meter and make installations necessary for the collection. The revenue will amount to $30 a day and it is understood that the rates were figured out on the basis of agreements made with other large users of city water. It is stated that under existing conditions about 4,500,000 gallons of water wastes from the lake every day and that the agreement will give the city a revenue from a portion of water which has hitherto gone down the river. The arrangement is a temporary one which may be altered if it proves inconvenient to the city. A considerable amount of preliminary engineering work has already been done in connection with the proposed plant during the past three months and it is understood that such is the nature of the site that, from an engineering standpoint that the mill may be expected to be in operation at least two months earlier than was originally contemplated.

Mayor Matthews, of Port Arthur, who was in Toronto recently, said that the contract to supply power to the Great Lakes Pulp and Paper Company at $18 per horse power was going to seriously handicap the two pulp mills and the paper mill in Port Arthur where a higher rate for power was being paid. When the Great Lakes company started operations, he said. there was no doubt other mills would make representations to have any disadvantages removed and consequently to have their power rate reduced. Mayor Matthews stated that the Thunder Bay Paper Com-

petty on recording the application for a timber limit. It was estimated that 10,000 horse power would be required to operate the mill.

A visitor to Toronto just now is A. MacKenzie Livingstone, of Livingstone Page & Co., paper makers agents, London, England, who stated in an interview that the high standards of excellence attained and maintained by the printing industry of Great Britain was due largely to the paper that they used. No Canadian jobber, he said, need fear the introduction of these papers, as they did not compete with any paper for printing purposes produced in this country. "I notice a distinct difference between the business man of New York and of Canada," he said. "Your Canadian does not look so worried nor care-worn as the man from New York. There is on openness and breadth about this country that is simply delightful." It is Mr. Livingstone's first visit to the Dominion.

A train bearing 42 cars of newsprint, and constituing the longest train of newsprint that ever left Northern Ontario, arrived in Toronto on August 24. It came from Abitibi Pulp and Paper Company's plant at Iroquois Falls and it left North Bay drawn by one of the latest type passenger locomotives which the Canadian Pacific is building at its Angus shops. Ordinarily it would require two engines to haul this train of more than 1,100 tons, but a record was established when the huge engine arrived in Toronto without mishap. Water was taken but four times during the trip. Included in the train were cars for the various newspapers in Canada and twelve United States newspapers, the entire shipment representing the cut made upon more than 200 acres of pulpwood.

Mr. F. H. Lock of the Canadian Paperboard Company, Limited, attended a meeting of the Purchasing Agents Association of Montreal held on August 21. The annual convention of the Canadian Associations will be held at Hamilton on October 19.

Col. R. R. McCormick, president of the Chicago Tribune, and director of the Ontario Paper Company, Limited, and Mr. Warren Curtis, Jr., mill manager, with other members of the staff, were in Montreal last week en route to the company's property on the north shore of the St. Lawrence.

Mr. F. W. Clarke, president and general manager of the Gulf Pulp and Paper Company, Clarke City, P. Q., is making his annual trip to England to confer with the Northcliffe interests.

The plans of the Armstrong Whitworth Company's pulp and paper plant in Newfoundland include the building of a small town with two churches, a theatre, a school and 800 houses.

Mr. J. D. Gilmour, woods manager and director of the Anglo-Newfoundland Development Company, Limited, was a visitor to Montreal last week. Referring to the question of the export of pulpwood, he stated that the Government of Newfoundland prohibited this. Two concessions had been made in exceptional cases where the wood was so situated that it was not available for domestic manufacture.

The Quebec Government have decided to open a school for printers in Montreal, with the object of training printers.

The St. Regis Paper Company, Limited have a large force of men engaged in the construction of wharves and other work at Godbout, P. Q. This work includes the building of a chute for conveying pulpwood from the Godbout River overland to Godbout Harbor, this system being in connection with a plant for preparing the pulpwood.

New Brunswick News

Among the names mentioned for a vacant seat in the Canadian Senate from New Brunswick are those of Angus McLean of Bathurst, president of the Bathurst Company and Donald Fraser of Plaster Rock, president of the Fraser Companies Limited.

The first newsprint produced in the new paper mill of the Bathurst Company at Bathurst, N.B., was delivered to the New Brunswick Publishing Company, publishers of two daily newspapers in St. John. A year ago the New Brunswick Publishing Company in which the Bathurst Company executive is understood to have an interest, leased the publishing plant in St. John of the Standard, Limited, and changed the name of that morning daily to the Daily Journal. Recently, the New Brunswick Publishing Company secured control of the Daily Telegraph and Evening Times two daily papers owned for twelve years by J. E. Moore, lumberman and Geo. McAvity, manufacturer and merchant. The Daily Journal has been merged with the Daily Telegraph.

Low water is causing much trouble for the pulp and paper companies, in rafting operations. Some of the most important rivers have decreased alarmingly in depth. In some cases the water has dropped from twelve feet to two feet, and in some cases the river beds are showing, where normally at this time of year there would be ten to fifteen feet of water. The water has never been known to be so low. This is in direct contrast with the highest freshets ever known in the spring. Indications are that a large percentage of pulpwood logs will be remaining on the banks of the rivers, unless the water rises appreciably before the ice forms in November.

SLASH BURNING EDICT FOR N. B.

Spring and summer slash burning has been prohibited in New Brunswick, as a result of the agitation for increased precautions to prevent forest fires.

This decision has been reached by the Minister of Lands and Mines and is promulgated in a proclamation published in the Royal Gazette this week; the only period during which slash burning will be allowed will be during the month ending September 15th and then only under permit and official supervision.

Regulations which thus become effective provide for the burning of slash under the direct supervision of fire rangers in their districts, provision being made for special attention being paid to precautions against the spread of fires. The proclamation vests in Forest Rangers authority to issue or refuse permits, according to the conditions prevailing in their districts, and any person burning under the new arrangement is required to notify his immediate neighbors before setting fire so that they may take the necessary steps to protect their property.

Temptations are the crises which test the strength of character. Whether we stand or fall at these crises depends largely on what we are before the testing comes.

Men speak of heaven and hell as if these were merely places of habitation. But heaven is the confirmation of character and so is hell. Happiness is impossible to evil.

UNITED STATES NOTES

Announcement was made last Thursday by the United States Service of the conditional sale of 334,000,000 cubic feet of timber on the Government's Alaskan reservations to Hutton, McNear & Dougherty of San Francisco at 60 cents a cord for Sitka spruce and 30 cents for Western hemlock, which prices will stand until 1931, to be revised subsequently at five-year intervals. Title to the land remains in the Government. According to the Forest Service, under the perpetual timber supply plan at least 1,500,000 tons of paper can ultimately be produced in Alaska every year. The quantity is more than one half of the newsprint now consumed annually in the United States and nearly 20 per cent of the total consumption of all kinds of paper and wood fibre products. The San Francisco firm purchased what is known as the Cascade Creek unit of pulp timber, situated on Thomas Bay, in the Tongass National Forest. The buyer has compiled with all of the terms specified by the Forest Service in the advertisement of the sale, which has been running four months. When satisfactory financial guarantees to insure carrying out the project are filed at Juneau, a final contract will be approved. The unit is the second of fourteen pulp and paper units in the Tongass National Forest within which sales have been awarded following legal advertisement. As the contractors cut off the timber they will be bound to plant seed-trees enough to insure a perpetual supply. They must agree to establish pulp and paper mills with a specified minimum production.

In Government circles the view is taken that the development of this vast pulpwood area will greatly reduce the pressure upon the fast vanishing timber supplies in the United States. It is expected also to reduce very materially the country's dependence on Canadian timber. It will mean, as well, a continuous source of public revenue and will have powerful exemplary consequences for scientific forestry throughout the country.

Chief Forester Greely believes that the Alaskan forests can be made to supply about 60 per cent. of the present consumption in the United States. Other pulpwood districts in the Puget Sound region, the Southern States and New England can be made to take care of the remaining 40 per cent. of the country's requirements, and with a reasonable margin for safety. Pulp and paper manufacturing plants in Alaska can operate twelve months in the year, the Chief Forester claims, as climatic conditions are much more favorable for such work than is popularly believed. "Should the Canadian Government put into effect the embargo legislation already enacted." Mr. Greeley declared, "many American paper mills of Northern New York and New England will be compelled to go out of business or remove their plants elsewhere. This removal process would entail an enormous expense, and we hope it may not become necessary. It must not be thought, however, that the paper consumers of this country must rest permanently at the mercy of Canada for such is not the case. At present 56 per cent. of our newsprint comes from Canada in one form or another, but we can furnish it all eventually if we are forced to it. It would mean merely a rather uncomfortable process of readjustment."

The first sale of pulp timber area awarded to operators in the Tongass Forest was made in the latter part of 1920, when the Alaska Pulp and Paper Company of Seattle bought about 15,000,000 cubic feet of stumpage within the Port Snettisham unit. This company is now operating a small pulp mill and expects to erect a newsprint plant. A third sale is now pending.

Licenses to develop the water power in the national forests of Alaska are obtained from the Federal Power Commission, under an arrangement which allocates the power sited to the manufacture of the timber most logically available to them. The Cascade Creek site has an esti mated capacity of 23,700 horsepower. The Forest Service and the Federal Power Commission are collaborating in a survey of the more important water-powers in Southwestern Alaska, whose development will facilitate the establishment of a paper industry.

All Holyoke paper mills, according to statements given out by their managements, resumed operations last Wednesday despite the strike of stationery firemen. Hope of an immediate settlement with the firemen now in the fifth week of the strike, has been abandoned. The mill owners have been turning their efforts to filling the places of the striking firemen. The manufacturers have offered to adjust working conditions, but declined to raise wages. The firemen have turned down this offer.

The outlook for paper mills throughout New England is that there will be a revival of activity after the summer lull about a month earlier than usual, or during September rather than October. Exceptionally good orders have poured in during the summer.

Tentative plans under consideration for a reorganzation of the American Writing Paper Company are expected to include an assessment on the common and preferred shares to supply working capital and funds to pay off the company's indebtedness. It is quite probable that the large accumulations in back dividends on the preferred stock will be wiped out in the course of events, as there appears very little chance that they can be paid. At the present time deferred dividends on the $12,500,000 7 per cent. preferred stock total 158 per cent. The formation of a committee to formulate details for financing is being delayed by the absence of several directors.

Paper production and shipments in July are shown by the American Paper and Pulp Association's monthly summary to have declined noticeably as compared to June. The decreased production applies to all grades, and shipments decreased in all grades with the exception of hangings. Newsprint production was off 7 per cent. and shipments 8 per cent.; book paper 14 and 17 per cent respectively; paper board, 16 and 15 per cent.; boxboard, 25 and 24 per cent; wrapping paper, 19 and 18 per cent.; bag, 41 and 26 per cent.; fine, 21 and 19 per cent.; tissues, 20 and 10 per cent.; hanging, 8 and 2 per cent.; (the latter figure represents gain); felts and building, 7 and 7 per cent.; other grades, 14 and 17 per cent. Total decrease in production, all grades, 14 per cent., and shipments, 12 per cent. The reduced production is accounted for by the fact that the month had fewer working days than June, as well as to the fact that seasonal conditions usually operate to restrict operations in July.

British Trade News

(From our London Correspondent.)

London, August 13, 1923. — There is a good discussion on Kraft paper and prices going on in England at present. It has arisen over foreign prices and the qualities placed on the British. I have pointed out at frequent intervals that the British mills find it almost impossible to compete with the Scandinavian and German prices of kraft paper owing, amongst other causes, to the depreciation in the rates of exchange in Europe. This week nearly a truck load of German Marks could be secured for the British sovereign and with financial conditions in such a state of chaos it is really impossible for the British mill owner to enter into a straightforward, open, honest, competition, because his rivals have him throttled on the question of cheaper production. These foreign prices are also affecting Canadian Kraft in the British market and there is only one way to stop the present unfair competition and that is by putting on an import duty for countries outside the British Empire, while the debased rates of exchange exist. Millowners here would greet it smiling, but the old Liberal school — now nearly extinct — might rouse an intensive agitation to kill it.

New Mill

W. V. Bowater & Sons are going to build a mill on the old Northfleet dockyard, which is on the Thames opposite Tillbury docks. I understand that two of the Walmsley's 221 inch fast running machines will be installed for newsprint production. The position secured for the mill is a good one as vessels from Canada and Scandinavia will be able to discharge pulp at the front door directly they swing into the river from the Channel.

Finnish Pulp Industry

This week I was talking to a pulpwood seller from Finland. He tells me that conditions are good and the people and industries are getting well away with their revival in trade. "For four months," he added, "I have been doing nothing but studying conditions in the forests for my firm and looking into labor saving devices. I could see everywhere I went, plenty of work and there are plenty of orders. I have just run across to London to see if I can sell pulpwood. We have big stocks on hand and I want to sell a few cargoes — will you buy one." That is the spirit in Finland just now and only 473 men are out of employment in the country.

Sweden's Oldest Mill

A noteworthy jubilee has just been celebrated in Sweden at Klippans paper mill. This is the oldest paper mill in Sweden and dates back 350 years. It was a Crown paper mill until 1772, when it was sold to a private company. In 1832 Sweden's first machine paper mill was established on the site. The business was greatly increased by Charles A. Bock, who rebuilt the mill and extended the business, which now employs several hundred workers The principal output is in the finer quality papers.

Becker & Co., Ltd.

To comply with the requirements of the Stock Exchange, and for information only, particulars of their undertaking, more especially as regards £200,000 6 p.c. First Debenture stock, free of tax, are announced by Becker & Co. Ltd. The stock constitutes a floating charge on the assets of the business, subject to $1,473,600 7 p.c. collateral Trust Bonds of the Saguenay Pulp and Power Co. The stock is redeemable by an annual payment to the trustees of £4,000 or by drawings. The company sold to the Hedley Trust, Ltd., £100,000 stock at 95 p.c. and there is now a balance in hand of £83,800 which is held as security by the company's bankers. It is proposed to sell this stock when the opportunity arises. The total amount of stock now outstanding is £198,000.

It is stated that Becker & Co. Ltd. have contracted for the whole of the production of the Folla Pulp Mills, in Norway. The production will be about 10,000 tons this year.

Studying Canada

Mr. A. Mackenzie Livingstone, of the firm of Livingstone Page & Co., is in Canada trying to develop trade in the Dominion market for some of the high quality papers his firm handle.

Mr. Eric Bowater is also in America studying the interest of the firm of Bowater.

Senator "Jim" Couzens arrived in London this week to study afforestation in Europe for the Senate forestry committee. He says he is going to Germany and Russia, after he has a look round France and Belgium.

The Pulp Market

The market is unchanged, owing to the holiday feeling that pervades it. Prices are also unchanged.

The strike of dock workers in London has greatly dislocated business. In other ports all the men have resumed work.

Some Fire-Fighters!

It is doubtful if there is a paper or pulp mill equipped with two bands of fire-fighters as exist in the Apsley mill and the Cronley mill of John Dickinson & Co., of Hertfordshire. Their appliances, motors, pumps, fire escapes, are modern and at the English competitions of National Fire Brigades the Apsley men secured 12 prizes for smartness and quickness in work and the Cronley men four prizes. This is a record.

BRITISH EMPIRE EXHIBITION

Work is proceeding apace with the great exhibition buildings at Wembley, near London, and the accompanying plan will give an idea of the extent of the ground that will be covered. Space is now nearly all booked up and the position of the Canadian section is shown in close proximity to Australia. The Prince of Wales states that the organisation of the exhibition is now on a sound basis and it was a bold challenge which the Empire made to the world when it undertook the task of organising the exhibition so soon after the devastating and unsettled conditions caused by the Great War. They must show to the world that the Empire possesses the same unity, courage, and perseverance in peace-time as in the stress of war. The British Empire Exhibition was not a business venture — it was a mighty high ideal and should mark a new era in imperial trade.

Pejepscot Paper Co. is making changes of an extensive nature at its Topsham mills. New roofs are being put on both machine rooms and a number of improvements in equipment are being installed. A new boiler house is being built at its Lisbon Falls plant.

Low water is giving trouble in many of the mills in Maine, several have lost much time in shut downs.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, August 28. — "Don't think I am a pessimist". I am not. I am convinced that Canada will progress, carry her load of debt and pay it. We have been through a serious dpression, but we are on the upgrade. I neither expect nor hope for a trade boom, but I look for steady improvement in business for several years to come, and that this country will successfully solve the many problems before it.' The above is an extract from a speech made by Mr. C. Howard Smith, president of the Howard Smith Paper Mills, Limited, at a meeting of the Kiwanis Club, Montreal on August 23. This opinion may be fairly said to be the view taken by most people in the paper trade not only as regards their particular line but as regards the general commercial outlook. Mr. Smith argued that it was the wisest policy to manufacture the raw materials into the finished product rather than export these materials to be finished in other countries, and he instanced the export of pulpwood, the trade in which he said was facilitated by favorable railway rates to the States.

Although the paper business in Montreal is very, very slow in practically all lines, there is a decided disposition to look on the bright side, and to expect, to use Mr. Smith's expression, a steady improvement. The mills report that orders are not coming in very well but here again there is a disposition to take a cheerful view of prospects.

The time is not far distant when the price of newsprint for 1924 will be under consideration. That price will be set after the study of several factors, and it is more than probable that we shall see an advance. Conditions are shaping towards that end. The value of pulpwood is going up, under the stimulus of an increased demand, the dealers naturally taking advantage of this to boost prices, while the price of groundwood is also ascending, as high as $52 per ton having been paid for high grade mechanical pulp. This is all indicative of a bigger price for newsprint. Word has reached Montreal that many of the American newspaper publishers are adjusting themselves to that possibility and that no great opposition is anticipated from this quarter. The publishers are in fact beginning to realise that if they are to be assured of a continuous and reliable supply of newsprint at reasonable prices in the future, the paper manufacturers must obtain a market price for their output that will allow a sufficient margin to put back a fair amount of capital into forest upkeep, the only alternative to this being a very rapid depletion of the remaining pulpwood, with the certainty of a scarcity of paper later on, necessitating a price far beyond that now thought of.

During July Canadian newsprint mills produced 105,716 tons of newsprint, compared with 90,282 tons in July 1922, bringing up the total for the seven months of the year to 727,613 tons, an increase of 120,825 tons or 20 per cent over that of 1922. Canada is increasing her output at a greater rate than the United States, and is gradually approaching the total production of American mills. The exports of newsprint by Canadian mills in July totalled 92,958 tons, compared with 77,004 in July, 1922; the total for the seven months was 643,724 tons as against 534,344 in 1922, a gain of 20 per cent. The States took practically the whole of the Canadian exports, British South Africa, Australia and New Zealand buying a total of 14,000 tons. Exports to the U. S. A. in the seven months were greater than last year by 134,429 tons or 27 per cent.

The exports of book paper in July showed an appreciable decrease on those of July 1922 — 257,100 pounds against 617,700, this being due to smaller shipments to the U. K. and Australia, and also to the fact that New Zealand dropped out of the market. For the seven months however our mills are away ahead of the corresponding period in 1922; the figures are 2,925,600 pounds in 1923 and 930,400 in 1922. In bonds and writings a different state of affairs is shown, the July exports being 190,100 pounds compared with 157,400 in 1922. The total for the seven months' period is striking 1,501,800 pounds against 501,000 pounds in 1922. The U. K. South Africa, Australia, New Zealand, India and Japan bought heavily, Australia with 489,000 pounds, taking about double this year, while the U. K. requirements rose from 20,800 to 176,400 pounds. In kraft wrapping paper, the exports in July were 1,643 tons compared with 1826 in 1922. The figures for the seven months being 12,153 tons against 9,728. The U. K. Japan and Australia were the chief customers.

Groundwood is the feature of the pulp section. It is scarce, and the price is advancing. Water conditions in Northern New York are such as to handicap grinding, and the mills are looking to Canada to secure supplies, which are far from abundant. Bleached sulphite is in fair demand with the outlook promising. The pulp export figures for July show little variation except for groundwood. The shipments of this pulp amounted to 34,047 tons compared with 26,873 in July 1922, the U. S. A. taking 18,349, the U. K. 11,907 and France 3,791. For the seven months the exports were 172,225 tons against 144,145 in 1922. Bleached sulphite shipments were 12,590 in July compared with 13,312 in 1922, while the figures for the seven months were 95,894 and 81,242 respectively. Canadian mills shipped 24,819 tons of unbleached sulphite in July, practically the same as in 1922, bringing the total for the seven months to 130,620, compared with 102,026 in 1922. The U. S. A. and the U. K. were the principal buyers. The U. S. A. purchased all the exports of kraft pulp, amounting to 12,468 tons in July, and the same remark applies to the exports for the seven months, 81,420 tons.

Although the principals of some American mills express the opinion that the Government Commission into the question of a pulpwood embargo is not to be

taken seriously, the fact remains that they are taking steps to secure a considerable increase in their wood piles. In June the exports of pulpwood showed a gain of about 150 per cent over the corresponding month, while in July the exports totalled 151,794 cords, an increase of 60,829 cords or 67 per cent over the corresponding month in 1922. Some of the American mills with affiliations on this side have ceased operations in the States so far as pulpwood is concerned and are drawing their entire supplies from Canada.

Ontario Market News

Although some lines of paper are showing slight signs of business improvement trade in the pulp and paper industry generally is not as good as was promised for this season of the year. It was anticipated that the end of August would see a reaction from the quiet period during the holiday season and that signs of good fall business would begin to appear. Only in a few lines does there seem to have been a recovery in the general conditions prevailing throughout the summer and late spring and jobbers, particularly, are complaining at the protracted quiet spell. Everyone in the business, however, believes that recovery is bound to come in the early fall and with it the paper trade will be back again to its accustomed stride. Just now, in most lines, small orders are the rule among the consumers of paper. Jobbers are not stocking up to any extent, for the printer and other consumers are only doing business with the jobber on a hand to mouth basis. The paper converting trade, also, is using less paper than it has for some time although there is a disposition to look for a good fall trade. Of course, the newsprint situation is extremely strong and all the mills are running full. Board mills, also, report a fair amount of business, which means that the paper box manufacturers are beginning to book more orders. Manufacturers of kraft and wrapping papers speak optimistically of the outlook and state that they are selling more goods just now than they were a month ago. Business has undoubtedly improved in these lines during the past ten days. On the other hand paper bag manufacturers report business as rather dull with a tendency on the part of distributers to book very lightly. None of the book, bond and ledger mills, as far as can be learned, are booked up any distance ahead and in some instances the mills are said to be running light, while some of the larger mills report that their output is keeping up to the average. It is generally admitted, however, that it requires greater effort to market these lines just now than it did a few months ago. There is only a fair call for card boards, blanks and blotting paper and the envelope trade is light in volume just now. Tissue and toilet paper manufacturers report a steady business with prices holding firm. Specialty and standard lines of tissues have had a fair sale during the summer and there has been a greater consumption this year than ever before in the specialty lines of tissue which has kept the mills busy through the summer months. In the raw stock market there are no changes to record. Prices of pulp are holding fairly firm but no stocks of volume appear to be changing hands. Groundwood is still quoted at from $38.00 to $40.00 and there have been no changes in chemical pulps from the prices quoted in these columns during the past two or three weeks.

NEW YORK MARKETS

New York, August 25 — (Special Correspondence) — As the fall draws nearer activity in the paper industry is steadily increasing. From all corners of the trade come reports of expanding business, of consumers enlarging the scope of their buying, of jobbers finding it necessary to place larger orders with mills, and of manufacturers speeding up their production so as to keep pace with the growing demand for paper of various kinds. The broadening of trade in paper is developing this year a little earlier than usually. Buyers, who apparently have the greatest faith in the stability of prices, are absorbing supplies freely, partly because they feel that paper costs are not likely to recede and partly because their requirements are increasing in a way necessitating that they secure larger amounts of paper to cover their wants.

Probably no other single factor is so indicative of the fundamental strength in the paper industry at present than is the prevailing situation in raw material. Nearly every kind of raw stock used by paper mills has witnessed an appreciable rise within the past few weeks. This advance in raw material prices is believed to be the customary rise which occurs along toward the middle of September, and the fact that it developed sooner this year than ordinarily would seem to prove that paper mills are running at a better rate of normal than usually at this time. Wood pulp is firm, particularly mechanical pulp, which has scored a sharp advance in price recently. Cotton rags are on a much higher level than they were a month or so ago, while old waste paper is double in price of only a few weeks back. Obviously, the increased cost of raw stock has proportionately increased the cost of manufacturing paper and has served to stiffen prices of the finished product. Manufacturers in a majority of cases have held quotations on their product more or less stationary but it stands to reason that prices will have to advance if current high raw material levels are maintained, and it is probable that this outlook for higher prices is one reason consumers are so readily purchasing paper and board today.

Consumption of newsprint has started to climb again following the mid-summer lull. Shipments of print paper are moving forward from mills to consuming centres in heavy volume, and publishers are in numerous instances seeking additional amounts to augment their contract commitments. Prices of newsprint are firm. No one seems to be worrying about any change in quotations over the balance of the year since manufacturers have announced they will not alter prices, and price therefore cuts little figure in the present business in newsprint, consumers buying freely whenever needing supplies and meeting the rates quoted by mills without hesitation.

Book paper is gradually increasing in activity. Inquiry from large consuming quarters is on the rise, and mills are reported to be expanding their production to take care of the new orders coming in. Most book paper mills are well fixed with business, of both contract and transient character, and demand is developing in a manner promising a very busy fall season and a broad outlet for the remainder of this year. Machine finished book is quoted at an average of 6.50 cents a pound f.o.b. New York for the usual run of quality of this kind of paper, and a majority

of mills are quoting above this figure, especially where transient buyers are concerned. Coated book paper is priced at from 8 cents a pound upwards.

Fine papers are in fair demand. Reports state that some of the writing paper plants in the Holyoke district which have been shut down because of a firemen's strike have resumed operations, non-union firemen having been put in the places of the strikers. Manufacturers in New England have moved the great bulk of their surplus stocks of fine paper during the past five weeks or since the strike of firemen was declared, and this branch of the industry therefore is in a stronger statistical position than in a long time. Prices are firm and the tendency is toward higher levels. Jobbers in New York report a growing demand from printers; one of the pleasing features being that orders are increasing in volume as well as in number.

Box boards are moving in larger tonnage. Since the strengthening of prices several weeks ago mills have been securing more business than when market levels inclined lower, emphasizing the fact that consumers are more willing to buy these days on a rising than a declining market. Board mills in the East are running at a good rate of capacity, and those in the Middle West are said to be enjoying an even greater demand for their product than prevails in the East. Quotations are well maintained at about $65 a ton f.o.b. New York for news board, and $60 to $62.50 a ton for plain chip board.

GROUND WOOD — Probably of all the various descriptions of raw material entering into the manufacture of paper mechanical pulp is at the moment in the strongest market position. This is due primarily to low water in mill streams which has appreciably reduced production of ground wood and thereby created a stronger demand, particularly from those consumers who depend on open market purchases to cover their wants. In numerous cases producers of ground wood who ordinarily have a surplus of pulp to sell are today looking for supplies. This is especially true of grinders in Upper New York State and in Wisconsin. Demand from such sources is brisk, and manufacturers having ground wood for sale have booked so large a tonnage of orders lately that many of them have now withdrawn offers and are refusing to commit themselves further excepting in cases where they feel obligated to keep regular customers supplied.

Canadian producers are reported readily securing $42 a ton and higher at pulp mills for all the spruce ground wood they care to sell for prompt shipment to consumers on this side of the border, with sales reported in exceptional instances up to $45 per ton. Domestic ground wood is quoted between $37 and $40 a ton f.o.b. grinding plants. Unless water conditions improve the probabilities are that prices will touch higher levels before the summer is over.

CHEMICAL PULP — Reports generally describe the chemical pulp market as rather quiet, it being stated that papermakers are buying merely to cover immediate needs and that most orders lack volume, yet proof is not lacking that in the aggregate a good movement of pulp is noticed. Certainly some consumers are purchasing in heavier tonnage than they usually do this early in the season, and indications

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WOOD PULP

SOLE AGENTS IN U. S. A., CANADA, MEXICO AND CUBA FOR

Finnish Cellulose Association
Helsingfors, Finland

AND

Finnish Wood Pulp Union
Helsingfors, Finland

are that big amounts of pulp are being delivered against back contracts.

The price tone is steady although now and then reports are received of sales of both foreign and domestic pulps at concessions, importers and dealers evidently being anxious to convert some of their stocks into cash. Signs are, however, that the great bulk of the pulp in so-called "weak" hands has been disposed of and transactions at less than recognized market price levels therefore are the exception. Quotations are on a rather wide range. Foreign unbleached sulphite of No. 1 grade is quoted at as low as 3.15 cents per pound ex dock New York and up to 3.40 cents, while Scandinavian kraft is quoted at 3.10 to 3.35 cents on the dock with some foreign kraft pulp recently sold to board mills down to 3 cents ex dock New York. Bleached sulphite is relatively in quiet demand but quotations are maintained, domestic No. 1 quality being quoted at 4.50 to 5 cents at pulp mills and imported bleached at around 4.50 cents on the dock.

RAGS — There has been a little sagging of prices in roofing rags this week in the New York market. Felt paper mills apparently have let down in their buying somewhat and dealers in their anxiety to do business have shaded prices No. 1 roofing stock has sold at 1.50 cents per pound f.o.b. New York, ,and slightly less in some cases, while No. 2 packing has been bought by consumers at 1.35 cents New York. Old white rags hold steady in price and are wanted in fairly large amounts, and thirds and blues are meeting with moderate demand at prices a little below the high levels recently prevailing. Dealers in New York quote 3 cents for repacked blues f.o.b. this city, and around 2.25 cents for miscellaneous packing. New cuttings incline to firm in price since reports were received telling of a resumption of operations in the fine paper mills in Holyoke as dealers look for a broader call for such rags shortly. No. 1 white shirt cuttings are quoted at 12.50 cents a pound f.o.b. New York, unbleached muslins at 11.25 cents, washables at 4.75 cents, blue overall cuttings at 8 cents, light silesias at 7.75 cents and fancy shirt cuttings at 6 cents.

PAPER STOCK — Low grades of old paper have continued to move downward in price whereas the high qualities hold comparatively steady; the market as a whole displaying less life than several weeks ago when an almost boom existed in waste paper. Probably the easiest grade at present is old folded newspapers, which some mills are buying at one cent per pound f.o.b. New York, with even lower prices reported. No. 1 mixed paper is selling at 85 cents a hundred ounds New York, common mixed at 55 cents, and box board cuttings at 90 cents. Flat stock has moved off a little in price. Dealers quote heavy flat magazines at 7.85 cents a pound f.o.b. this city, and crumpled book stock at 1.65 cents. Shavings are steady at between 4.25 and 4.50 cents per pound New York for No. 1 hard white, and 3.35 to 3.60 cents for No. 1 soft white shavings, and ledger stock also holds its own in price at 2 cents or higher f.o.b. New York.

OLD ROPE AND BAGGING — An improved demand for old manila rope is reported by local dealers. Paper mills are said to be still purchasing in a careful manner, ordering merely rope required for direct use, but several large consumers have evinced more buying interest this week and prices, while quotably unchanged, display a strengthening tendency. No. 1 domestic manila rope is quoted at 5.25 to 5.50 cents per pound f.o.b. New York, and foreign rope is priced at about similar levels. Old bagging is quiet though a fair movement to roofing paper mills is noted. No. 1 scrap bagging is quoted at 1.25 cents a pound f.o.b. New York, and roofing bagging at around 1.10 cents per pound.

WRAPPING FOOD IN PAPERS FORBIDDEN

Although on the civic statute books of Montreal for over eight years, a by-law prohibiting the wrapping of food-stuffs in newspapers or other printed materials is to be rigidly enforced from the health department, in both languages, instructing the citizens of its terms and of the intention of the officials to apply it without fear or favor.

The enactment in question absolutely forbids the use of newspapers, gazettes, books or pamphlets, circulars or any other printed wrapper for enveloping edibles. Papers may be used as outside binders, however, provided the food is previously encased in clean paper.

A fine not to exceed $40, or two months' imprisonment is the penalty provided for infraction of this law.

All persons handling food-stuffs, were notified that the authorities are instituting a vigorous campaign against disregard of this regulation, and that its provisions were to be strictly adhered to unless stringent action were desired.

NEWFOUNDLAND WOOD VIA SOREL

The steamer Bjornfjord, containing over 3,000 cords of pulpwood was unloaded at Sorel last week. She comes from Newfoundland. She is the twentieth vessel to be unloaded at the pulpwood conveyors built by the Quebec, Montreal & Southern Railway Co. at Sorel.

There will be several other large steamers of pulpwood coming to Sorel this season. The wood is piled for storage and is to be shipped, as called for, to the United States. There are already several thousand cords in storage. The Gwladys is on her way to Sorel with three thousand five hundred cords of the same kind of wood.

PRODUCTION EFFICIENCY LOWERS COST

An instance of reducing cost by increasing production is furnished by the Link-Belt Company which has lowered its price for their small portable loader to $550 each. The first reduction made possible by increased production was one of 16 per cent. or from $700 to $585. Each conveyor is equipped with a two or three phase 60 cycle motor, and raising and lowering mechanism. They are certainly very handy little machines for unloading coal, lime, lime stone, sulphur, etc.

Mr. W. L. Ketchen, who has been chief engineer at the Kipawa plant of the Riordon Company, has taken a position with the Whalen Pulp & Paper Mills, and will be located at their Port Alice plant, B.C.

BRITISH EMPIRE EXHIBITION

Wembley Park, LONDON
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INDEX TO MILL SUPPLIES

Addresses, whose names appear in the following classified index, may be found upon reference to their advertisements. An alphabetical index to advertisers will be found on the page facing the inside back cover. The following regulations apply to all advertisers: — One-eighth page, every issue, three headings; one-quarter page, every issue, six headings; one-half page, every issue, twelve headings; full page, every issue, twenty-four headings.

Buyers who are unable to find in the classification here given such machinery or supplies as they desire are invited to write Service Department, Pulp and Paper Magazine, Gardenvale, Que., who can, in all probability, refer them to proper sources.

Acid Towers:
Jenssen, G. D. Co.

Acid Proof Bricks & Cement:
Beveridge Supply Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.

Acid Systems:
Stebbins Engineering & Mfg. Co.

Accumulators — Hydraulic:
Hydraulic Machinery Co., Ltd.
Northern Foundry & Machine Co.
Port Arthur Shipbuilding Co., Ltd.

Air Compressors:
Canadian Ingersoll-Rand Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Darling Bros., Ltd.
Dominion Engineering Works, Ltd.
Fraser & Chalmers, Canada, Ltd.
Imperial Trading Co.

Air Conditioning:
Can. Sirocco Co., Ltd.
Ross, J. O. Engineering Co.
Sturtevant, B. F. & Co., of Can., Ltd.

Air Washers:
Sturtevant, B. F. Co.

Air Receivers:
Can. Des Moines Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Steel Trough & Machine Co., Ltd.

Alligator Pointers:
Adams Engine Company.

Alum:
M. Gottesman & Co., Inc.
Imperial Trading Co.
Kalbfleisch Corporation.

Ammonia Compressors:
Canadian Ingersoll-Rand Co., Ltd.

Antimonial Lead Pipe and Sheets:
The Canada Metal Co., Ltd.

Arrestors, Locomotive Spark:
Hendrick Manufacturing Co.

Babbitt Metals:
Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Canada Metal Co., Ltd., The
McAvity, T. & Son.
Tallman Brass & Metal, Ltd.

Baling Presses:
Hydraulic Machinery Co., Ltd.
Northern Foundry & Machine Co., Ltd.

Barkers:
Boving Hydraulic & Eng. Co., Ltd.
Canadian Barker Co.
Canadian Barking Drum Co.
Canadian Ingersoll-Rand Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Carthage Machine Co.
Dominion Engineering Works, Ltd.
Hamilton, Wm. Co., Ltd.
Horton Steel Works, Ltd.
MacKinnon Steel Co., Ltd.
Pulp and Paper Mill Accessories, Ltd.
Victoria Foundry, Ltd.
Walsh Plate & Structural Works, Ltd.
Waterous Engine Works, Co., Ltd.

Bearings:
Canadian Fairbanks-Morse Co., Ltd.
Canadian Link-Belt Co., Ltd.
Can. S. K. F. Co., Ltd.
Kingsbury Machine Works.

Beaters:
Bertrams, Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Clafin Eng. Co.
Emerson Manufacturing Co.
Hamilton, William Co., Ltd.
Northern Foundry & Machine Co.
Port Arthur Shipbuilding Co., Ltd.
Sherbrooke Machinery Co., Ltd.
Waterous Engine Works Co., Ltd.

Beater Bars & Bed Plates:
Beveridge Supply Co., Ltd.
Bolton W. D. Sons, Inc.
Pulp & Paper Mill Accessories, Ltd.

Belting:
Beveridge Supply Co. Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Dominion Belting Co.
Dominion Rubber System.
Dunlop Tire & Rubber Co.
Gutta Percha & Rubber, Ltd.
Jones & Glassco, Regd.
McAvity, T. & Sons, Ltd.
Sadler & Haworth.
Voorhees Rubber Mfg. Co. of Canada, Limited.

Belting — Leather:
Graton & Knight.

Bins:
Hendrick Manufacturing Co.
Port Arthur Shipbuilding Co., Ltd.

Bleaching Apparatus:
Port Arthur Shipbuilding Co., Ltd.
Stebbins Eng. & Mfg. Co.

Bleaching Boilers:
Biggs Boiler Works Co.

Bleaching Powders:
Gottesman, M. & Co., Inc.
Imperial Trading Co.

Blowers:
Canadian Sirocco Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
The Jeffrey Mfg. Co.
Ross, J. O. Engineering Co.
Sherbrooke Machinery Co., Ltd.
Sturtevant B. F. Co. of Canada, Ltd.

Boats, Motor Head-Works for towing logs:
Russel Brothers.

Boats, Power Winch:
Russel Brothers.

Bodies, Truck:
Hendrick Manufacturing Co.

Boilers:
Babcock & Wilcox, Ltd.
Canadian Sirocco Co., Ltd.
Dominion Engineering Works, Ltd.
Engineering & Machine Works of Canada, Ltd.
Fraser & Chalmers, Canada, Ltd.
Goldie & McCulloch Co., Ltd.
Hamilton, William Co., Ltd.
Leonard, E. & Sons, Ltd.
Port Arthur Shipbuilding Co., Ltd.
Walsh Plate & Structural Works, Ltd.
Waterous Engine Works Co., Ltd.

Boilers — Bleaching:
Biggs Boiler Works Co.

Boiler Preservatives:
Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Vera Chemical Co. of Canada, Ltd.

Brimstone:
Texas Gulf Sulphur Co.

Brass Wire Cloth Fourdrinier Wires:
See Wire Cloth

Bronze — Acid Resisting:
Carthage Machine Co.
Dominion Engineering Works, Ltd.
Hendrick Mfg. Co.
Hydraulic Machinery Co., Ltd.
McAvity T. & Sons., Ltd.
Northern Foundry & Machine Co., Ltd.
Porth Arthur Shipbuilding Co., Ltd.
Tallman Brass & Metal, Ltd.

Buckets:
Link-Belt Limited,
Hendrick Manufacturing Co.
The Jeffrey Mfg. Co.
McKinnon Steel Co., Ltd.
The Steel Trough & Machine Co., Ltd.

Burrs:
Canadian Fairbanks-Morse Co., Ltd.

Cables — Power and Telephone:
Northern Electric Co., Ltd.

Calenders — Glassine:
Norwood Engineering Co.

Calender Rolls:
Bertrams, Ltd.
Dominion Engineering Works, Ltd.
Northern Foundry & Machine Co., Ltd
Waterous Engine Works Co., Ltd.

Calenders:
Norwood Engineering Co.

Camp Supplies:
Canadian Milk Products, Ltd.

Cans:
Diamond State Fibre Co. of Can. Ltd
Samuel M. Langston Co.

Cars, Dump and Flat:
Canadian Equipment Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
MacKinnon Steel Co., Ltd.

Cars, Freight:
Canadian Equipment Co., Ltd.

Cars — Quarry and Industrial:
Canadian Fairbanks-Morse Co., Ltd.
Hendrick Manufacturing Co.

Casein and Satin White:
Imperial Trading Co.
Kalbfleisch Corporation, The

Castings Iron and Steel:
Boving Hydraulic & Eng. Co., Ltd
Canada Foundry & Forgings, Ltd.
Canada Metal Co., Ltd., The
Link-Belt Limited.
Darling Bros., Ltd.
Dominion Engineering Works, Ltd.
Goldie & McCulloch Co., Ltd.
Goold Shapley & Muir Co., Ltd.
Hamilton Co., Ltd., Wm.
Hamilton Gear & Machine Co.
McAvity, T. & Son.
Northern Foundry & Machine Co. Ltd.
Port Arthur Shipbuilding Co., Ltd.
Waterous Engine Works Co., Ltd.

Castings, Bronze and Brass:
Boving Hydraulic & Eng. Co. Ltd.
Dominion Engineering Works, Ltd.
Canada Metal Co., Ltd., The
Goold, Shapley & Muir Co., Ltd.
Hamilton, William Co., Ltd.
McAvity, T. & Son.
Northern Foundry & Machine Co.
Port Arthur Shipbuilding Co. Ltd.
Tallman Brass & Metal, Ltd.
Union Screen Plate Co. of Canada.
Waterous Engine Works Co., Ltd.

Caustic Soda:
Gottesman, M. & Co., Inc.
Wilson-Paterson Co.

Cement, High Temperature:
Beveridge Supply Co., Ltd.
Can. Johns-Manville Co., Ltd.

Cement Roofing:
The Barrett Co., Ltd.
Beveridge Supply Co. Ltd.

Chain Blocks:
Canadian Fairbanks-Morse Co., Ltd.

Chain Conveyors:
See Conveying Machinery

Chain Drives (Silent and Steel Roller):
Canadian Fairbanks-Morse Co., Ltd.
Link-Belt Limited.
Hamilton Gear & Machine Co.
The Jeffrey Mfg. Co.
Jones & Glassco, Regd.
Renold, Canada, Ltd., Hans.

Change Speed Gears:
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Dominion Engineering Works, Ltd.
Hamilton Gear & Machine Co.
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Hamilton, William Co., Ltd.
Eng. & Machine Works of Can., Ltd.
Pulp and Paper Mill Accessories, Ltd.
Victoria Foundry Co., Ltd.
Waterous Engine Works Co., Ltd.

Chipper Knives:
Bolton, John W. D. Sons, Inc.

Chip Disintegrators:
Canadian Ingersoll-Rand Co., Ltd.
The Jeffrey Mfg. Co.
Pulp and Paper Mill Accessories, Ltd.
Waterous Engine Works Co., Ltd.

Chip Screens:
Boving Hydraulic & Engineering Co., Ltd.
Canadian Mead-Morrison Co., Ltd.
Hamilton, William Co., Ltd.
Northern Foundry & Machine Co., Ltd.
Pulp and Paper Mill Accessories, Ltd.

China Clay:
Beveridge Supply Co. Ltd.
English China Clays, Ltd.

Clay:
Beveridge Supply Co., Ltd.

Clutches:
Boving Hydraulic & Engineering Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Canadian Link-Belt Co., Ltd.
Dominion Engineering Works, Ltd.
Jones & Glassco, Regd.
Northern Foundry & Machine Co., Ltd.
Waterous Engine Works Co., Ltd.

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Concrete-Hardener and Water-Proofer:
Beveridge Supply Co., Ltd.

Condensers, Electrical, Static and Power:
Canadian Ingersoll-Rand Co., Ltd.
Griswold & Co.

Conduits:
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Northern Electric Co., Ltd.

Conduits (Wooden):
Canadian Pipe Co., Ltd.

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Fraser, Brace & Co., Ltd.

Contractors' Equipment:
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Canadian Fairbanks-Morse Co., Ltd.
Canadian Equipment Co., Ltd.
Northern Foundry & Machine Co., Ltd.
Gartshore, J. J.

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Dominion Engineering Works, Ltd.
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Northern Crane Works.
Reid, C. de Wolf.
Sturtevant, B. F. Co. of Canada, Ltd.
Victoria Foundry, Ltd.
Waterous Engine Works Co., Ltd.
Walsh Plate & Structural Works, Ltd.

Conveyors — Coal and Ash:
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Beveridge Supply Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
The Jeffrey Mfg. Co.
Link-Belt Limited.
Canadian Mead-Morrison Co.,
Dominion Engineering Works, Ltd.
Waterous Engine Works, Co., Ltd.

Controllers — Temperature:
Canadian Fairbanks-Morse Co., Ltd.
Foxboro Co., Inc.

Core Machine — Paper:
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Samuel M. Langston Co.
Victoria Foundry, Ltd.

Corrugated Paper Machinery:
Canadian Fairbanks-Morse Co., Ltd.
Langston Co., Samuel L.

Couch Rolls:
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Carthage Machine Co.
Dominion Engineering Works, Ltd.
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Sherbrooke Machinery Co., Ltd.
Waterous Engine Works, Co., Ltd.

Couplings:
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Boving Hydraulic & Engineering Co Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Link-Belt Limited.
Jones and Glassco.
Northern Foundry & Machine Co.
Port Arthur Shipbuilding Co., Ltd.
Victoria Foundry, Ltd.
Waterous Engine Works, Co., Ltd

Cranes:
Canadian Fairbanks-Morse Co., Ltd.
Link-Belt Limited.
Dominion Engineering Works, Ltd
McKinnon Steel Co., Ltd.
Northern Crane Works, Ltd.
Victoria Foundry, Ltd.
Waterous Engine Works., Co., Ltd.

Cranes — Crawlers Type:
Link-Belt Limited.

Cranes — Electric:
Babcock & Wilcox, Ltd.
Canadian Fairbanks-Morse Co., Ltd
Dominion Engineering Works, Ltd.
Northern Crane Works, Ltd.

Cranes — Locomotives:
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Link-Belt Limited.
Dominion Engineering Works, Ltd.

Creosote Oil:
Barrett Co., Ltd.
Beveridge Supply Co., Ltd.

Crushers:
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Pulp and Paper Mill Accessories, Ltd

Crushers — Coal or Coke:
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Cutting Machines:
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Hamblet Machine Co.
Morrison, J. L.

Cylinders:
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Dominion Engineering Works, Ltd.
McAvity, T. & Sons., Ltd.
Northern Foundry & Machine Co.
Sherbrooke Machinery Co., Ltd.
Victoria Foundry, Ltd.
Waterous Engine Works Co., Ltd.

Cylinder Covers:
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Christie, Ltd., Geo.
Johnson Wire Works, Ltd.
Northern Foundry & Machine Co., Ltd.
Niagara Wire Weaving Co., Ltd., The
Pulp and Paper Mill Accessories, Ltd.
Tyler, W. S. Co., The
Waterous Engine Works Co., Ltd.

Cylinder Moulds:
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Capital Wire Cloth & Mfg. Co., Ltd.
Hydraulic Machinery Co., Ltd.
Northern Foundry & Machine Co., Ltd
Port Arthur Shipbuilding Co., Ltd.
Pulp and Paper Mill Accessories, Ltd.
Sherbrooke Machinery Co., Ltd.
Griswold & Co.
Waterous Engine Works Co., Ltd.

Cylinder Rolls:
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Hydraulic Machinery Co., Ltd.
Northern Foundry & Machine Co., Ltd
Port Arthur Shipbuilding Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.
Waterous Engine Works Co., Ltd.

Damper Regulators:
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Underfeed-Stoker Co. of Canada, Ltd.

Dams:
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Fraser Brace Co., Ltd.

Dandy Rolls:
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Dominion Engineering Works, Ltd.
Tyler, W. S. Co., The
Johnson Wire Works, Ltd.
John Date.

Desintegrators — Pulp:
De-Inking Machines:
Waterous Engine Works Co., Ltd.

Derricks:
Dominion Engineering Works, Ltd.
McKinnon Steel Co., Ltd.

Diaphragms, Rubber:
Dominion Rubber System
Dunlop Tire & Rubber Goods Co., Ltd.

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Hamilton, William Co., Ltd.
Hydraulic Machinery Co., Ltd.
Northern Foundry & Machine Co., Ltd.
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Digester Lining:
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Stebbins Eng. & Mfg. Co.

Digester Brick:
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John Date.
The Jeffrey Mfg. Co.

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Port Arthur Shipbuilding Co., Ltd.
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Harland Engineering Co., Ltd.

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Can. General Electric Co., Ltd.
Harland Engineering Co., Ltd.
Northern Electric Co., Ltd.

Electrical Condensers:
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Northern Electric Co., Ltd.

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The Jeffrey Mfg. Co.

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Lacey, James D. & Co.
Sewall, J. W.

Engineers — Electrical:
Montabone, A. J. F.

Engineers — Soda Pulp Mill:
Herbert S. Kimball.

Engineers — Steam:
Burroughs, Chas. W.
Combe, F. A.
Montabone, A. J. F.
Taylor, Ltd., H. S.

Engineers — Ventilating:
Burroughs, Chas. W.
Management Engineering & Development Co.
Reed Co., Ltd., Geo. W.
Ross, J. O. Engineering Co.
Taylor, Ltd., H. S.

Engineers — Consulting:
Carey, Jas. L.
Combustion Engineering Corporation, Limited.
Ferguson, Hardy
Hamilton Gear & Machine Co.
Hardy, George.
Jenssen, G. D. and Co.
Kimball, Herbert S.
Management Engineering & Development Co.
Montabone, A. J. F.
Sewell, James W.
Stebbins Eng. & Mfg. Co.
Taylor, Ltd., H. S.
Wallace, Jos. H. & Co.
Williams, F. M.

Engineers — Chemical:
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Engines — Crude Oil:
Pulp & Paper Mill Accessories, Ltd.

Evaporators:
Swenson Evaporator Company.

Exhausters:
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Can. Sirocco Co., Ltd.
The Jeffrey Mfg. Co.
Ross, J. O. Engineering Co.
Sherbrooke Machinery Co., Ltd.
Sturtevant, B. F. Co. of Canada, Ltd.

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Victoria Foundry, Ltd.

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Reid, C. de Wolf.

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Northern Electric Co., Ltd.
B. F. Sturtevant Co. of Canada, Ltd.
Ross, J. O. Engineering Co.

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Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.

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Bates & Innes, Ltd.
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Kenwood Mills, Ltd.
Pulp & Paper Mill Accessories, Ltd.
Penmans, Ltd.
Porritts & Spencer, Ltd.
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Whyte, Wm.

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Goold, Shapley & Muir Co., Ltd.
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Flag Poles (Steel):
Ontario Wind Engine & Pump Co., Ltd.

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Hydraulic Machinery Co., Ltd.
Norwood Engineering Co.

Fire Brick:
Alberene Stone Co.
Beveridge Supply Co., Ltd.
Elk Fire Brick Co.
Pulp & Paper Mill Accessories, Ltd.

Fire Clay:
Elk Fire Brick Co.

Fire Doors:
Reed Co., Ltd., Geo. W.

Fire Fighting Apparatus:
Waterous Engine Works Co., Ltd.

Fire Pails:
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Flights:
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Folding Machines:
Norwood Engineering Co.

Flow Meters:
Bailey Meter Co., Ltd.

Forced Steam Circulation System:
Crane Co., Ltd.

Flooring:
Reed Co., Ltd., Geo. W.

Foundations:
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Foundry Ladles:
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Niagara Wire Weaving Co., Ltd.
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Tippet & Co.
United Wire Works, Ltd.
Tyler Company, The W. S.
Whyte, Wm.

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Victoria Foundry, Ltd.
Waterous Engine Works, Co., Ltd.

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Sturtevant, B. F. Co., of Canada, Ltd.

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Northern Electric Co., Ltd.

Furnace Linings:
Alberene Stone Co.
Beveridge Supply Co. Ltd.

Gages — Draft:
Bailey Meter Co., Ltd.

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Bailey Meter Co., Ltd.

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Diamond State Fibre Co. of Can., Ltd.

Gaskets-Rubber:
Voorhees Rubber Mfg. Co. of Canada, Limited.

Gasoline Engines:
Canadian Fairbanks-Morse Co., Ltd.
Goold Shapley & Muir Co., Ltd.
Ontario Wind Engine & Pump Co., Ltd.

Gasoline Storage Tanks:
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Canadian Fairbanks-Morse Co., Ltd.

Gauges:
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McAvity, T. & Son.

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Canadian Fairbanks-Morse Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
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Dominion Engineering Works, Ltd.
Goldie & McCulloch Co., Ltd.
Hamilton Co., Ltd., Wm.
Hydraulic Machinery Co., Ltd.
Northern Foundry & Machine Co., Ltd
Port Arthur Shipbuilding Co., Ltd.
Waterous Engine Works, Co., Ltd.

Generators:
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Northern Electric Co., Ltd.
The Harland Engineering Co. of Canada, Ltd.
Sturtevant, B. F. & Co. of Canada, Ltd.

Grates:
Combustion Engineering Corp Ltd.
Port Arthur Shipbuilding Co., Ltd.

Grate Bars:
Beveridge Supply Co., Ltd.
Goldie & McCulloch Co., Ltd.
Victoria Foundry, Ltd.
Hamilton, William Co., Ltd.
Northern Foundry & Machine Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Waterous Engine Works, Co., Ltd.

Grating Area:
Hendrick Manufacturing Co.

Gravity Recorders:
Bailey Meter Co., Ltd.

Grindstones:
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Canadian Fairbanks-Morse Co., Ltd.
International Pulp Stone Co.
Lombard & Co.
Miramichi Quarry Co.
Smallwood Stone Co.
Smallwood-Low Stone Co.

Grinders:
American Voith Contact Co., Inc.
Canadian Ingersoll-Rand Co., Ltd.
Eng. & Machine Works of Can. Ltd.
Northern Foundry & Machine Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Sherbrooke Machinery Co., Ltd.
Walsh Plate & Structural Works, Ltd.
Waterous Engine Works, Co., Ltd.

Guards — Machinery:
Hendrick Manufacturing Co.

Hangers:
Bond Engineering Works, Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Canadian Link-Belt Co., Ltd.
Goldie & McCulloch Co., Ltd.
Hydraulic Machinery Co., Ltd.
Northern Foundry & Machine Co.
Victoria Foundry, Ltd.
Waterous Engine Works Co., Ltd.

Heaters — Feed Water:
Sturtevant, B. F. Co., of Canada, Ltd.

Heating and Ventilating:
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Ross, J. O. Engineering Co.

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Goold Shapley & Muir Co., Ltd.
Hamilton, William Co., Ltd.
Northern Crane Works, Ltd.
Victoria Foundry, Ltd.

Hoods — Paper Machine:
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Taylor, Ltd., H. S.
Williams Apparatus.

Hose:
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Norwood Engineering Co.

Hydraulic Presses:
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Hydraulic Machinery Co., Ltd.
Northern Foundry & Machine Co.
Port Arthur Shipbuilding Co., Ltd.
Waterous Engine Works Co., Ltd.

Instruments—Testing:
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Canadian Fairbanks-Morse Co., Ltd.
Northern Electric Co., Ltd.

Insulation:
Can. Johns-Manville Co., Ltd.
Northern Electric Co., Ltd.

Iron Castings:
See **Castings:**

Jordan Castings:
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Port Arthur Shipbuilding Co., Ltd

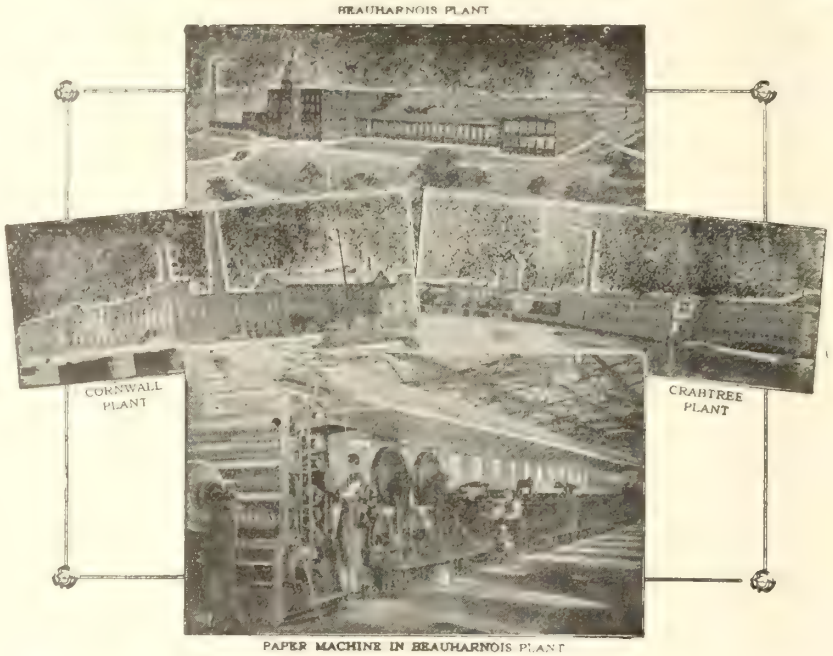
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Canadian Fairbanks-Morse Co., Ltd.
Hamblet Machine Co.
Peter Hay Knife Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.
Waterous Engine Works Co., Ltd.

Knives Paper Cutting:
Galt Knife Co., Ltd.
Hamblet Machine Co.
Peter Hay Knife Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.
Reid, C. De Wolf.

Kollergangs:
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Boving Hydraulic & Engineering Co. Ltd.

Lamps — Electric:
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General Electric Co., Ltd.
Harland Engineering Co., Ltd.
Northern Electric Co., Ltd.

Laboratory Equipment:
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Lath Machines:
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Lead Burning:
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St. Lawrence Welding Co.

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Canada Wire & Iron Goods Co.

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The Jeffrey Mfg. Co.
Montreal Locomotive Works, Ltd.

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Canadian Holt Co., Ltd.

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Imperial Trading Co.

Lubricating Graphite:
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Dominion Paint Works, Ltd.

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Meters — Gas:
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The Bristol Co.
Peacock Bros., Ltd.

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Meters — Water:
Bailey Meter Co., Ltd.

Monel Metal:
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Northern Electric Co., Ltd.
Sturtevant, B. F. Co. of Canada, Ltd.

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Provincial Paper Mills Co., Ltd.
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Beveridge Supply Co., Ltd.
Brompton Pulp & Paper Co.
Canada Paper Board Co.
Eddy, E. B. & Co.
Price Bros. & Co., Ltd.
Reid, C. de Wolf.

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Can. Vegetable Parchment Co., Ltd.
Garden City Paper Mills Co., Ltd.
Victoria Paper & Twine Co., Ltd.

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Can. Vegetable Parchment Co., Ltd.
Diamond State Fibre Co., of Can., Ltd.
Garden City Paper Mills Co., Ltd.
Victoria Paper and Twine Co., Ltd.

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Acer, J. H. A. & Co., Ltd.
American Woodpulp Corp.
Brompton Pulp & Paper Co., Ltd.
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John C. Christie Co.
M. Gottesman & Co., Ltd.
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Can. Vegetable Parchment Co., Ltd.
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Price Bros & Co., Ltd.
Howard Smith Paper Mills.
Victoria Paper & Twine Co., Ltd.

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Soda Recovery Systems:
Swenson Evaporator Co.

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Brompton Pulp & Paper Co., Ltd.
Gottesman, M. & Co., Inc.
Dryden Pulp & Paper Co., Ltd.
Lagerloef Trading Co., Inc.
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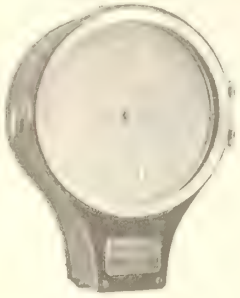
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Lagerloef Trading Co., Inc.
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St. Maurice Paper Co.
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Interlake Tissue Mills Co., Ltd.
Victoria Paper & Twine Co., Ltd.

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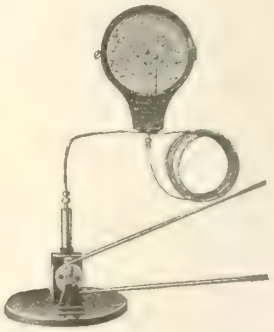
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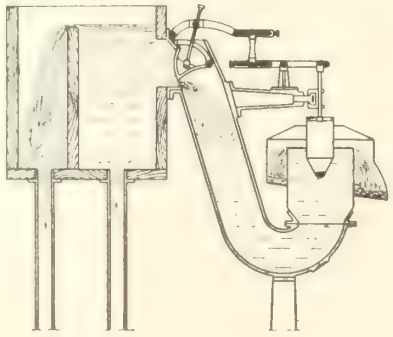
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White, W. H.

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Pacific Coast Pipe Co., Ltd.
White, W. H.

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Northern Foundry & Machine Co.

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MacKinnon Steel Co., Ltd.
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Waterous Engine Works Co., Ltd.

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Victoria Foundry Co., Ltd.
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Miramichi Quarry Co., Ltd.
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Smallwood-Low Stone Co.

Pulp Stone Burrs:
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Pulp & Paper Mill Accessories, Ltd.
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Canadian Ingersoll-Rand Co., Ltd.
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Hamilton, Wm. Co., Ltd.
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Waterous Engine Works, Co., Ltd.
Weir, Ltd., G. & J.

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Sherbrooke Machinery Co., Ltd.
Waterous Engine Works, Co., Ltd.

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Can. Link-Belt Co., Ltd.
Hamilton, William Co., Ltd.
Hendrick Manufacturing Co.
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Pulp and Paper Mill Accessories, Ltd.
Sherbrooke Machinery Co., Ltd.
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Waterous Engine Works, Co., Ltd.
Westbye, P. P.

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Goldie & McCulloch Co., Ltd.

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Crane Co., Ltd.
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Pulp & Paper Mill Accessories, Ltd.
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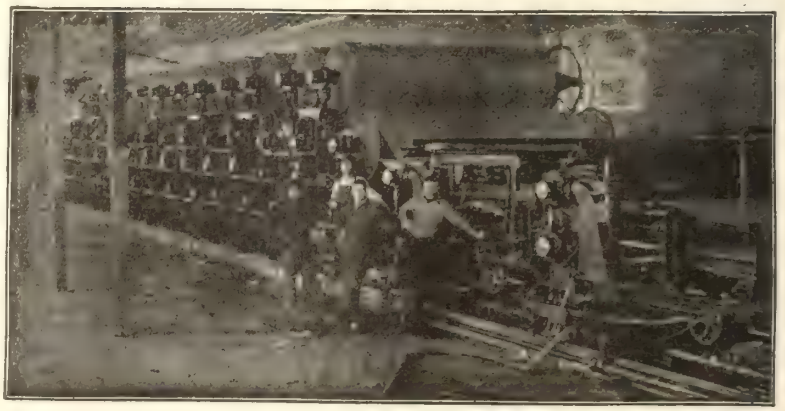
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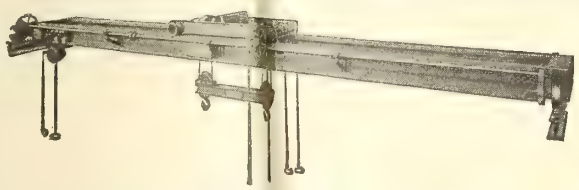
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ALPHABETICAL LIST OF ADVERTISERS

See Classified List on Page 73.

Unpaged advertisements appear in every other issue.

A

Alberene Stone Co., Ltd.
Abitibi Power & Paper Co. Ltd. 84
Acer, J. H. A. & Co., Ltd. 74
American Voith Contact Co., Inc.
American Stone Co. 24
American Woodpulp Corporation 24
Ayers, Limited 11

B

Babcock & Wilcox 3
Barrett & Co., Ltd., The
Barber, W. J. & Co., Ltd. 22
Bathurst Company, Ltd. 82
Bailey Meter Co., Ltd.
Bates & Innes, Ltd. 25
Bemis Manufacturing Associates 30
Bertrams, Limited
Belgo Paper Co., Ltd., The 82
Beveridge Supply Co., Ltd.
Black-Clawson Co., The 86
Bolton, John W. & Sons, Inc. 26
Boving, Hydraulic & Engineering Company Ltd.
Bristol Co., The 80
Brompton Pulp & Paper Co., Ltd. 82
Burgess, E. T.

C

Canada Foundries & Forgings, Ltd. 18
Canada Metal Co., Ltd., The 28
Cameron Machine Co. 87
Canadian Combustion Co., Ltd.
Canadian Barker Co.
Canadian Des Moines Steel Co., Ltd. 27
Canadian Elixman Co., Ltd.
Canadian Equipment Co., Ltd. 30
Canadian Fairbanks-Morse Co., Ltd. 32
Canadian Ingersoll-Rand Co., Ltd. 17
Canadian Johns-Manville Co., Ltd.
Canadian Milk Products, Ltd.
Canadian Nashua Paper Co., Ltd.
Canadian Paperboard Co., Ltd. 24
Canadian Pipe Co., Ltd. 19
Canadian Sirocco Co., Ltd. 18
Canadian SKF Co., Ltd.
Canadian Vegetable Parchment Co., Limited
Canadian Vickers, Ltd. 10
Canadian Westinghouse Co., Ltd.
Capital Wire Cloth & Mfg. Co., Ltd. 26
Carey, Jas. L. 22
Christie, George, Ltd. 80
Clayton, Neil & Jones, Ltd. 12
Combustion Engineering Corporation Limited 5
Crane, Limited
Crittsinger Burt Co., Inc. 19
Cleveland Stone Co., The

D

Date, John 25
Dept. of Lands, Forests & Mines Ontario
Dodge Mfg. Co. of Canada, Ltd.
Dominion Belting Co., Ltd. 25
Dominion Engineering Works, Ltd. 1
Dominion Oxygen Co., Ltd.
Donnacona Paper Co., Ltd., The 24
Don Valley Paper Co., Ltd. The 24
Dryden Paper Co., Ltd. 24
Dunlop Tire & Rubber
Dunham, C. A. Co. 27

E

Elixman Paper Core Co., Inc.
Elk Fire Brick Co. of Canada, Ltd.
English China Clays, Ltd.
English & Machine Works of Canada, Ltd.

F

Ferguson, H. S. 22
Ford, J. & Co.
Foundation Co., Ltd. 22

G

Galt Knife Co., Ltd.
Garden City Paper Mills, Ltd.
Geigy Co., Inc. 27
Goldie & McCulloch Co., Ltd.
Goold, Shapley & Muir Co., Ltd. 86
Gottesman, M. & Co 29
Grasselli Chemical Co., Ltd., The
Graton & Knight Mfg. Co., Ltd.
Gutta Percha & Rubber, Ltd. 6

H

Hamblet Machine Co. 28
Hamilton, Wm. Co. of Canada, Ltd. 89
Hamilton Gear & Machine Co. 23
Hans Renold of Canada, Ltd.
Hardy, George F. 22
Harland Engineering Co. of Canada, Limited
Hay Knife Co., Ltd., Peter
Hendrick Mfg. Co.
Hercules Powder Co.
Holliday, L. B. & Co., Ltd.
Huestis, A. M.
Hydraulic Machinery Co., Ltd. 4

I

Industrial Engineering Co. Ltd. 19
Interlake Tissue Mills Co., Ltd. Limited. 23
Interlake Tissue Mills Co., Ltd., 72

J

Jeffrey Mfg. Co.
Jenkins Bros., Ltd.
Jenssen Co., G. D. 28
Johnson Wire Works, Ltd., The 30
Jones & Glassco, Regd.

K

Kalbfleisch Corporation, The
Kander Paper Stock Co., Ltd., The 24
Kenwood Mills, Ltd. 7
Kimball, Herbert S. 28
Kingsbury Machine Works
Klipstein, A. & Co., Ltd.
Kuttroff, Pickhardt & Co. Inc.

L

Lacey, James D. & Co. 18
Lagerloef Trading Co. 67
Langston, Samuel M. Co. 27
Laurentide Co., Ltd. 84
Lawrence Machine Co.
Link-Belt Limited
Lombard & Co. Inc. 27

M

Machinery Co. of America 2
Management Engineering & Development Co., The 23
Mead, Patton & Co., Ltd.
McArthur, Irwin, Ltd. 20
McAvity, T. & Co., Ltd.
McKinnon Steel Co., Ltd. 22
Mills Works & Machinery, Ltd. 80
Miramichi Quarry Co., Ltd., The 18
Montabone, J. A. F.
Montreal Locomotive Works, Ltd.
Morrssion, J. L. Co., The 74

N

National Paper Stock Co., The 24
Niagara Wire Weaving Co., Ltd. The 74
Northern Crane Works, Ltd. 87
Northern Electric Co., Ltd.
Northern Foundry & Machine Co. 12
Norwood Engineering Co. of Canada, Limited 26

O

Oliver Continuous Filter Co.
Ontario Wind Engine & Pump Co., Limited

P

Pacific Coast Pipe Co., Ltd. 30
Peacock Brothers, Ltd. 16
Penmans Limited 20
Port Arthur Shipbuilding Co., Ltd. 29
Porritts & Spencer Co., Ltd. 19
Price Bros. & Co., Ltd.
Price & Pierce, Ltd. 82
Provincial Paper Mills, Ltd. 76
Pusey & Jones Co., The
Pulp & Paper Mill Accessories, Ltd. 85
Pulp & Paper Trading Co. 28

Q

Quarries, C. & M. Co. 18

R

Reed, Geo. W. & Co., Ltd.
Relph, Darwen & Pearce 86
Rolland Paper Co., Ltd.
Ross Engineering of Canada Ltd. 27
Russell Brothers 26

S

Sadler & Haworth 2
Sewall, Jas. W. 22
Sherbrooke Machinery Co. 8-9
Smallwood Stone Co., The 24
Smallwood Low Stone Co., The 27
Smith Howard Paper Mills, Ltd. 78
Spanish River Pulp & Paper Mills, Limited 86
Steel Trough & Machine Co., Ltd. 18
St. Maurice Paper Co., Ltd. 19
Sturtevant Co. of Canada, Ltd. 87
Swenson Evaporator Co. 23

T

Tallman, Brass & Metal Ltd.
Taylor, J. A.
Taylor, H. S. Ltd. 23
Texas Gulf Sulphur Co. 32
Ticonderoga Machine Works
Tippett & Co., Ltd. 28
Tyler, W. S. & Co., The 27
Trimbey Machine Works

U

Underfeed Stoker Co. of Can., Ltd
Union Screen Plate Co. of Canada, Limited 87
Union Sulphur Co., The 30
United Wire Works, Ltd. 28

V

Vera Chemical Co. of Canada, Ltd. 18
Voorhees Rubber Mfg. Co. of Canada, Limited 23

W

Wallace, John H. W. & Co., Ltd. 22
Wardlaw, T. D. & Son 27
Walmsley, Charles & Co. Ltd. 13-14-15
Warren, Kenneth L. 22
Watford Engineering Works, Ltd. 13
Waterous Engine Works 90
Wayagamack Pulp and Paper Co., Limited
Weir, G. & J. (Canada), Ltd. 16
Westbye, P. P.
White, W. H. 22
Whyte, William 23
Wilson Patterson Co. 25

Return to
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